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DAMPER ON PROGRESS

IN the House of Commons on Wednesday last the Chancellor of the Exchequer made a statement in explanation of the Government's economy proposals —proposals which aroused almost universal criticism. The Prime Minister had already announced that the Ministry of Fuel and Power would to some extent have to curtail expenditure on long-term projects, and though Sir Stafford Cripps did not elaborate this point in detail he did indicate the extent of the economy which would be demanded immediately, leaving the position vague, however. The fuel and power investment programmes provisionally approved by the Government for 1950 involved a total expenditure of £237 mill. It has been decided to cut this total by some £25 mill., and Sir Stafford emphasised that the larger part of this cut will come from a reduction in capital expenditure on electricity development in 1950. The electricity programme is by far the heaviest of all the fuel and power investment plans, accounting for more than half the total, and the cut will fall mainly in the sphere of distribution. 'We cannot afford,' he said, 'to provide new supplies of electricity as rapidly as we would have liked, and some check must be imposed on the rate at which new connections are made and schemes of rural electrification are implemented.' In any case, without check the problem of closing the gap between plant capacity and consumption could only be aggravated. The cuts in the coal industry and the oil refinery programmes will be relatively small. The other major cut will affect the gas industry, and the cut will be in proportion to that made in the electricity programme. We assume that plans already passed and projects started on new gas-making plant must go ahead. The effect of the cut will be to put a brake on large measures of integrating gas supply planned to improve efficiency. In the House, Sir Stafford did not clarify the position by saying that 'those schemes, however, would not in any case have matured for some time.'

In spite of this direct restriction, the gas industry will go ahead with maximum effort in implementing its avowed service to the consumer and the community in general. The same maximum effort will be expended in spite of indirect restrictions on its services. And that brings us to a further aspect of the Government's economy programme —the cut in the housing programme, expenditure on which in 1950 is to be reduced by £35 mill. The popularity of gas in post-war housing has played no small part in the attainment of a 44% increase in domestic gas consumption since 1938. The relationship between new houses and the domestic load was cogently summarised in the I.G.E. report on the domestic utilisation of gas, which was presented at the conference of the International Gas Union last June. The report stated: 'Housing conditions cannot be changed overnight, and as a consequence there still remains a formidable gap between the amount of gas which the consumer would be prepared to take to obtain the comfort and convenience desired in the home, and the amount of gas which he can in fact take on account of limited facilities. The filling of this gap in the future, as re-housing progresses, offers to the gas industry a substantial increase in business.'

With the cut in housing, the possibility of achieving at an early date this 'substantial increase' obviously recedes. Next year's output of houses will, in fact, be lower than at any time since 1918. Before the Government's economy decision there had this year been a steady decline in the number of permanent houses completed each month, culminating in August in the lowest monthly total to date. In the first eight months of this year only 146,000 new dwelling units were provided, compared with 292,000 in 1948. The temporary housing programme, which had already been allowed to run down in 1948, has been wound up completely. Conversions of large houses into flats and other forms of adaptation are becoming increasingly difficult. Since Mr. Aneurin Bevan assured an audience at Bristol on September 21 last that the Government had no intention of cutting the housing programme events have well and truly moved quickly. The impact of dollar shortage was being felt seriously long before devaluation. Since devaluation, prices of basic materials employed in house building have soared. The National Federation of Building Trade Employers estimates that the £35 mill. cut will mean a reduction of more than 20,000 houses from the present programme, which is producing only 180,000 new houses a year. It seems possible that private building will be reduced almost to zero.

The gas industry is faced with problems other than those imposed by the cut in fuel and power expenditure.

An immediate effect of the restrictions on private building will be the potential loss of what has probably been the most remunerative, although not the largest, part of the increased domestic load attributable to post-war development. More important is the fact that more people will have to stay for a longer time either in temporary converted accommodation with limited facilities for gas appliances or in old property designed and built in the age of the coal range. In such cases neither the tenant nor the landlord, with restriction of rents and the burden of purchase tax, has the incentive to extend the carcass and fix new apparatus. It is salutary to face facts such as these. It would be folly to be dismayed by them. The gas industry, with a service running over a century and a quarter, has faced harder problems than those currently imposed. And we ourselves, in spite of heading this note 'Damper on Progress,' perceive within the industry a strength of unity and purpose greater than ever it has known—a strength capable of meeting the present challenge.

WATER HEATING

IN the development and interpretation of both domestic and industrial fields of gas usage the gas industry owes much to the work carried out with such care and skill at Watson House, the results of which work have been placed unreservedly before the industry. The latest contribution from that fertile source is a paper given to the London and Southern Junior Gas Association by Mr. C. H. Purkis, who, together with his colleagues, is to be thanked for presenting a wealth of useful information on the cost of domestic hot water service by gas, in analysing the factors which contribute to the cost of the service given, and in reporting improvements which have been made in recent years—since 1945—in the running cost position as a whole. These 'improvements' have to be viewed, of course, in relation to increased and increasing costs generally. But the advance is there; and the author shows how by combining divided storage and 'on off' working with better thermal insulation it should be possible to reduce running costs of existing storage heaters and systems by one-third. That is one aspect only of the paper.

In this country we are living sub-standard, and this state of affairs is obviously likely to continue. All that can effect proper economy is not only desirable but essential. On the other hand the water heating situation in Great Britain today is to our mind farcical. Hot water is vital to health. That being so, we have thrust upon us as a real deterrent to health a heavy purchase tax on gas water heaters. We are urged to conserve coal; paradoxically we are forced to waste coal because of this purchase tax on gas water heaters. If water heating is incorporated in a solid fuel cooking range, then water heating is free from purchase tax. As the cost of raw materials and of labour increases, so does the incidence of purchase tax. The while the incomes of gas consumers in general are becoming more restricted; many economies in gas utilisation are due to sheer inability to pay for the service, and the growing capital cost of appliances is a serious matter. It is not a question of demand; the demand exists. In the area of the former Gas Light and Coke Company, for example, it is known that something like half a million consumers have no water heating system at all. Such frustration, however, does not lessen the value of the work reported by Mr. Purkis; rather does it heighten its worth.

From two distinct angles our sympathy goes out to the manufacturers of gas water heaters who have been called upon to withstand as best they could the burden of the purchase tax, which at one period was set at 100%. Their task has been and remains unenviable; and though they can justly recall with pride the major part which they played in building up for the gas industry a water heating load by the supply of efficient appliances coupled with first-class propaganda, their recollections must be tinged with not a little bitterness. For it cannot be emphasised too strongly that hot water is a necessity, not a luxury. That is one aspect. The other is the curious reluctance of the gas industry to cheapen gas usage by a drastic reduction in the sulphur content of the gas supplied. The sulphur-removal story is indeed a sorry one which goes back long before the outbreak of World War II. Before the war the case for the removal of sulphur from town gas came into the 'cast-iron' class. Yet, all along, the gas industry has burked the issue in most bewildering and astonishing fashion, though the fact is all-apparent that with gas practically free from sulphur there is an immense amount to be gained in the domestic and the industrial field alike. We are not arguing that Mr. Purkis was not right in devoting a considerable part of his paper to the question of maintenance cost of water heaters. He has to take things as he finds them, but we suggest that he might have raised his voice against the sulphur bugbear, which obviously has a bearing on his theme. The maintenance problem as regards water heaters, especially instantaneous water heaters, he says, 'calls for the use of incorrodible materials, better protective coatings, wider flueways, and a re-assessment of the virtues of certain types of burner in the light of experience.' To our mind it also calls for insistence that the gas engineer should play his part in the removal of sulphur from the gas he sends out of his works. If the general gas consumer was aware of what he in fact pays for the sulphur in gas he might feel inclined to put a question to his consultative council for 'attention and comment.'

It will be gathered that we regard the contribution by Mr. Purkis as one of considerable importance, though, with the author, we would underline that his survey of cost covers only half the composite picture for, as he himself remarks in an introduction, nothing is said of the advantages in service of an instantaneous water heater which will deliver unlimited quantities of hot water at the turn of a tap, or of the benefits arising from stratification in a storage vessel to which a gas circulator is fitted, or of the rapid delivery of hot water at a predetermined temperature from a gas storage heater of high recovery rate. Such was not the purpose of his paper. But we do emphasise that the strength of the gas industry in the water heating field, however handicapped and frustrated by external factors, lies in the variety of appliances it can offer, each particularly suited to particular conditions. The potential load is very great indeed. It is also a competitive field and in our opinion competition will increase rather than diminish.

HELP OR HINDRANCE

THERE was a delightful informality about the talk which Mr. Michael Milne-Watson gave to the North Thames Gas Consultative Council last Thursday. He explained that while some area boards took over more than 100 undertakings, the North Thames Gas Board acquired only 12, including the Gas Light and Coke Company, already large enough to rank as an area board on its own account. In some ways the acquisition of the other 11 undertakings was not unlike the amalgamations effected from time to time in the past, though the new circumstances called for an entirely new administrative and operational structure, with the old Gas Light area divided into six divisions and the other portions of the area into districts. One of the characteristics of gas nationalisation is the complete local autonomy given to the 12 boards which leaves them free to develop their own structures on lines which seem to them to be best in all the circumstances. They share one common objective, the provision of an adequate and economic gas supply, and the gas consultative councils who co-operate with them have the one aim of representing the interests of all classes of consumers and acting as a channel through which satisfactory relations may be maintained between supplier and user.

Members of the consultative councils are applying themselves to their tasks with commendable zeal, and we are convinced that when these entirely new bodies have survived what may be termed their teething troubles they will serve a very useful purpose. It is only natural that in their first burst of enthusiasm they should incur the risk of becoming a hindrance rather than a help. A case in point was a request made quite seriously by an Essex county councillor at the North Thames meeting last week for general permission to 'drop in' at Beckton and other gasworks and any of the area board's offices and showrooms at any time to see that everything was satisfactory. He suspected a certain amount of 'spit and polish' before organised visits, and was anxious to see things as they really were. Mr. Milne-Watson refused the request with courtesy and firmness, pointing out that such visits could be nothing but a hindrance. On behalf of the board he extended a warm invitation to the consultative council to pay organised visits at mutually convenient times, and he explained in some detail the machinery by which complaints and criticisms could be transmitted to the board. Co-operation will be encouraged, but it must be on constitutional lines, the Chairman of the consultative council being, as an *ex officio* member of the area board, the recognised link between the two bodies.

A CURIOUS ARRANGEMENT

WITH one exception the gas consultative councils throughout the country have adopted the principle of inviting the Press to be present at their meetings, and as far as the *Gas Journal* is concerned we have been assured that the reports which we have through this arrangement been able to publish have been altogether helpful. During recent weeks our pages have recorded the aims and aspirations of these consultative councils, and we think there will be general agreement that their deliberations have started on the right note and that their future usefulness is amply evident. The councils have always the right, of course, to withhold information of a private nature as they think fit, and the Press can be counted on not to abuse a privilege. In view of this generally amicable arrangement which works to mutual advantage and in the general interest, a recent resolution by the West Midlands Gas Consultative Council is all the more surprising. This resolution, passed at its last meeting, was to the effect that Press representatives may be admitted at the termination of the council's meetings and may be given a summary of the proceedings in the presence of any of the council members wishing to stay for such an interview. This 'stale crumbs' idea does not appeal to us in the least and we doubt whether it will hold attraction to the Press generally. What is to be gained by such a proposal, which naturally invites rumour? Only the West Midlands Gas Consultative Council knows.

THIS ÆSTHETIC BUSINESS

DR. THOMAS SHARP, town planning consultant, had a word to say on the siting of gasworks in his recent presidential address to the Institute of Landscape Architects. Speaking of both power stations and gasworks, he maintained that, provided they were well sited and well designed and their surroundings well landscaped, these great structures were less offensive in the country than in the towns, where they outraged the human scale to which all things in a town must be related. To ask 'why defile the country with what belongs to the town?' merely showed, he said, what an ignoble view had been taken of the town in England during the last 100 years. Dr. Sharp, it will be remembered, has already led one skirmish against the Oxford gasworks, and it is not therefore surprising to find him taking up arms again in a more general onslaught. He is but one of many who have expressed their dislike of what he has graciously called 'a mere shell round a machine for making gas and pushing it into gas pipes.' What is new is that he has suggested that gasworks should be put out to graze, where they may be 'less offensive.' This is not only impracticable; it is also in contradiction to his statement in 'Oxford Replanned,' that gasworks 'can be, and may be, excellent examples of industrial architecture.' The gasholder has, of course, always been the main butt of those whose sensitive souls are wounded by industrialism in all its forms. The gasholder may not be full of grace or beauty, but it provides a practical solution to an essential need of the community.

TRAINING FACILITIES

IN his presidential address to the Western District of the Scottish Junior Gas Association, Mr. R. F. Bell appropriately considered the technical training of the younger members of the industry in scattered districts, of which there are many in Scotland. He suggested—and, we think, rightly—that in this direction nationalisation, through area board working, provides opportunity for help in a practical way. Mr. Bell envisages an arrangement whereby works could be arranged geographically in groups, so that any one works within a group is reasonably accessible from another works. Each group could form a base for the training of the students in all the works comprising the group. 'I envisage,' he said, 'a training scheme controlled by the area board through an officer whose duty it would be to see that there was effective liaison and correlation between a trainee's work in his classes and his employment during the day. No young man would be expected to train outside this scheme, and works situated remote from an educational centre, like Oban or Stranraer, simply would not recruit youths intending to train and educate themselves as gas engineers.' Under the scheme, since more than one works would be available for the distribution of a comparatively small number of students, no works would feel that it carried a passenger. Wales, too, has its scattered and small undertakings; and we turn to the comments of Mr. Mervyn Jones, Chairman of the Wales Gas Board, at the last meeting of the Gas Consultative Council for Wales. He explained that the board fully realises that there are opportunities within the organisation and within the undertakings themselves for new entrants to the gas industry. The board has therefore

instituted a scheme for articled pupils, offering students who have reached School Certificate standard and who wish to enter the gas engineering profession a five-year apprenticeship with remuneration. The scheme is to be commended; its working will eventually add further strength to the gas industry in Wales.

MR. ISAACS AND THE MINERS

AFTER maintaining a prolonged silence on the question of declining manpower in the mines, the Government has at last expressed its views through the Minister of Labour, Mr. G. A. Isaacs. In reply to a question in the House of Commons on October 18, he told Mr. J. A. Boyd-Carpenter, M.P. for Kingston-on-Thames, that the decline was due to increased wastage rather than to a decrease in recruitment. His Ministry, he said, was doing everything in its power to encourage recruiting and to prevent the loss of workers who could make a useful contribution to the production of coal. Mr. Boyd-Carpenter then asked: 'Is the Minister aware that the target figures in the last three "Economic Surveys" have not been reached?' In view of this, and the fact that a decrease in numbers had now set in, did the Minister not believe his system of a 'ringed fence' around this industry to be thoroughly unsound? Mr. Isaacs said that it proved the contrary. There was not the need for the greater number anticipated because of the increasing use of mechanical devices, which were taking the place of men. The Control of Engagement Order was not having any deterrent on the coal industry. They did not consider that the decline in manpower was so serious in view of its relation to the increase in mechanisation. As the spokesman of the Government in this matter, Mr. Isaacs would appear to reflect a degree of complacency towards the manpower position which was commented on by a contributor to the *Journal* of October 12. The facts are these: Manpower in the mining industry, according to the latest figures issued by the Ministry of Fuel and Power, now stands at 710,600, the lowest it has been since 1945; within this total the number of faceworkers, which showed a welcome increase last year, has fallen steadily from a peak of 298,269 in April this year to 294,000; only 30,000 recruits were made in the first six months of this year, compared with 40,385 in the same period of 1948; and in spite of the Minister's assurances, there has been a net loss of 3,745 workers this half year, in contrast to an excess of recruitment over wastage amounting to 6,823 in the first half of 1948. It is true, of course, as Mr. Isaacs pointed out, that output per manshift has increased considerably, due to greater mechanisation, but can we or the Government be confident that this progress can be maintained in economic crises? The Prime Minister's economy programme, which foreshadowed the curtailment of long-term projects in the fuel industries, gives us sufficient cause for doubt.

Letter to the Editor

CO-PARTNERSHIP

DEAR SIR,—I note in the *Gas Journal* of October 19 that the Co-partnership Nationalisation Committee has submitted draft proposals for a co-partnership scheme to the Minister of Fuel and Power, to the Gas Council, and also to the Area Boards. I suggest that these proposals should also have been submitted to the trade unions represented on the National Joint Industrial Council and on the Regional J.I.C.s for the gas industry, and to the British Gas Staff Association for their consideration.

It must be remembered that in a large number of gas undertakings co-partnership schemes have never operated. Also if and when troubles have arisen out of co-partnership schemes, the manual worker has turned to his trade union for help and advice.

The present action of the Co-partnership Nationalisation Committee strikes me as being an attempt to secure the position of the higher salaried groups of those undertakings that had a co-partnership scheme. The higher salaried groups would undoubtedly lose a considerable amount of money per year, in comparison with the manual worker, should the decision be taken to wind up all existing co-partnership schemes. The majority of manual workers who are members of a co-partnership scheme seem to prefer hard cash instead of a bonus in a book, the manual worker claiming that he is quite capable of looking after his own money.

The proposals of the Co-partnership Committee may have much to commend them. If so, the proposals should be made widely known.—Yours faithfully,

T.U. BRANCH SECRETARY.

October 23, 1949.

Personal

Mr. **George Horrocks,** Northern Sales Manager to Richmonds Gas Stove Co., Ltd. (Radiation Ltd.), has retired. He joined the company in 1906 as an assistant to the late David Bryce, and on the death of Mr. Bryce in 1919 succeeded him as Northern sales representative. Later he became sales manager. During his long period of service Mr. Horrocks earned the friendship and respect of colleagues and competitors alike.

Mr. **E. Wulstan Atkins,** B.A.(ENG.), M.A.(CANTAB.), M.INST. GAS E., has been appointed Sales and Service Manager to the East Surrey Division of the South Eastern Gas Board with effect from November 14. Mr. Wulstan Atkins was until recently Distribution Engineer and Sales Manager to the Bath Gas Company. From the same date Mr. **Arthur Tennant** will relinquish his temporary appointment as Sales and Service Manager to the East Surrey Division and on December 5 he will take up his permanent appointment as Sales and Service Manager to the Sussex Division.

Mr. **A. H. Wilson** (Director of Research and Development, Courtaulds, Ltd.), Mr. **A. H. S. Hinchcliffe** (Governing Director of Glazebrook Steel & Co., Manchester), Lord **Halsbury** (Managing Director of the National Research Development Council), and Professor **R. S. Edwards** (London School of Economics) have been appointed members of the Advisory Council for Scientific Research for five years from Oct. 1. The new members succeed Mr. W. F. Lutyens, Mr. W. J. Drummond, Sir Henry Guy, and Sir William Halcrow, who have retired on the completion of their appointments.

Mr. **F. W. Rogers**, formerly Secretary and Accountant to the Gloucester Gaslight Company for 14 years, retired at the end of September, and Mr. A. L. Morris, Manager of the Cheltenham Sub-Division of the South Western Gas Board, recently presented him with a handsome standard lamp given by the Gloucester staff. In making the presentation, Mr. Morris paid tribute to Mr. Rogers's ability and referred to the many difficulties encountered during the war years. He conveyed to Mr. Rogers the best wishes of the Chairman, Mr. C. H. Chester, the Deputy Chairman, Mr. E. R. V. Porter, and the Divisional Manager, Mr. J. Carr, of the South Western Gas Board. Mr. Rogers, in expressing his thanks, said how gratifying it was to receive this expression of appreciation and esteem, which would be a pleasant reminder of the happy associations of the past 14 years. Mr. Rogers received his early training in the Gas Department of the Kendal Corporation, leaving there to serve with the Merthyr Tydfil Gas Company. His next appointment was as accountant in the London Office of a group of gas companies chiefly situated in Ireland. Since 1935 he has been engaged as travelling accountant to the Severn Valley Gas Corporation, Ltd., and Gas Consolidation, Ltd., and Secretary and Accountant to the Gloucester Gaslight Company. His record of practical experience extends over 57 years.

Mr. **J. R. W. Alexander,** M.A., LL.B., F.C.I.S., Barrister-at-Law, who was General Manager of the British Gas Council until its cessation on the nationalisation of the gas industry, has accepted an invitation to become the Executive Chairman of the Gas Engineers' National Guild, in which capacity he will negotiate the principal affairs of the Guild and advise on the attainment of its objects. The Guild represents the officers and senior or professionally qualified members of the staff of the industry as to the terms and conditions of their employment. The Minister of Labour and National Service has reappointed Mr. Alexander as Chairman of the Westminster

Employment Committee for a further period of three years. The Committee covers a highly important employment area; its purpose is to secure for the Ministry the full benefit of local knowledge and to bring the Employment Exchange into close touch with employers and employees, to which end it is entrusted with the widest functions of advice and guidance, and has to investigate criticisms by the public and suggest improvements. Among other activities, Mr. Alexander will continue to conduct and negotiate the affairs of the Gas Stockholders' Representatives Committee, which was established to facilitate the discharge of the duties of Stockholders' Representatives, to effect the necessary co-ordination and to protect gas stockholders in matters relating to the compensation payable to them and their other interests under the Gas Act, 1948. Mr. Alexander has also joined the Board of Alder & Mackay, Ltd., gas meter manufacturers, of Edinburgh, London, New Zealand, and branches. Mr. **J. B. Clay,** Sales Manager of the Company, has been elected a Director in the place of Mr. J. O. Scott, whose death is reported in this issue. The Chairman of the Company, which will next year celebrate its centenary, is Mr. J. Miller Thomson, W.S., and the Deputy Chairman is Mr. Harold E. Bennet, M.C., M.INST.GAS E.

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MR. WILLIAM A. BISHOP

The South Eastern Gas Board has announced the retirement, with effect from November 7, on medical advice of Mr. W. A. Bishop, Commercial Manager of the Croydon undertaking, after 37 years of service in the industry. Mr. Bishop entered the industry at Croydon, where he started as a junior under Mr. W. J. SANDEMAN, O.B.E., J.P., in 1912 and was successively Junior Assistant to the Distributing Engineer and Sales Manager, Commercial Assistant to the Distributing Engineer and Sales Manager (in 1923), Sales Superintendent, sales and Service Superintendent, and Sales and Service Manager.

He has served two periods on the Board of Examiners of the Institution of Gas Enginers, being Assessor in Gas Engineering (Supply) in 1938, and has occupied the chairmanship of two Salesmen's Circles. For some years, between the two wars, he lectured in Gas Fitting and Gas Supply at the Croydon Polytechnic, taking over from the late Mr. Thomas Holgate; and with the growth of this department under his stimulus he became head of the specially formed department of Gas Supply and Utilisation and continued in this capacity until 1938 when pressure of work necessitated his relinquishing the appointment. He was a member of the Moderating Committee (Gas Fitting and Gas Supply), City and Guilds of London Institute, and of the Sales Training Committee of the Institution of Gas Engineers. He is a past member of the Council of the Illuminating Engineering Society, and a member of the Institute of Fuel, the Institution of Gas Engineers, the Institution of Heating and Ventilating Engineers, and the Incorporated Sales Managers' Association.

For several years Mr. Bishop has been Chairman of the Exhibitions Sub-Committee of the National Publicity Committee and served on the Central Domestic Development Committee of the British Gas Council and on the Joint Consultative Committee. He has served also on the drafting panels of the Codes of Practice and Domestic Handbook and has contributed a number of papers and articles dealing with a variety of technical and commercial subjects on the supply side. He is a past Chairman of the Executive Council of the Croydon Chamber of Commerce and was acting President of the Chamber during the President's long illness in 1948. He served on the local Military Hardships Tribunal and was a member of the local Court of Referees set up by the Ministry of Labour during the war and immediate post-war period

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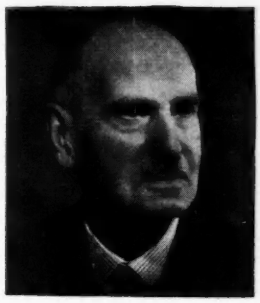
GAS CONSULTATIVE COUNCILS

The Minister of Fuel and Power has appointed the following to be Deputy Chairmen of the Gas Consultative Councils of which they are already members respectively: Mrs. **B. F. C. Adams** (Berwick), Northern; Miss **J. Stephen** (Bristol), South Western; Mrs. **J. Smith,** J.P. (Huddersfield), North Eastern; Mrs. **E. A. M. Oliver,** M.B.E. (Cosham), Southern; Councillor **S. J. Brown** (Birmingham), West Midlands; Councillor Mrs. **W. Kader** (Paddington), North Thames. It is also announced that Dr. **W. A. Hayward** (Monsanto Chemicals, Ltd., Ruabon) has been appointed a member of the Wales Gas Consultative Council. Mr. **J. Cullen** (Romfort) has been appointed an additional member of the North Thames Gas Consultative Council.

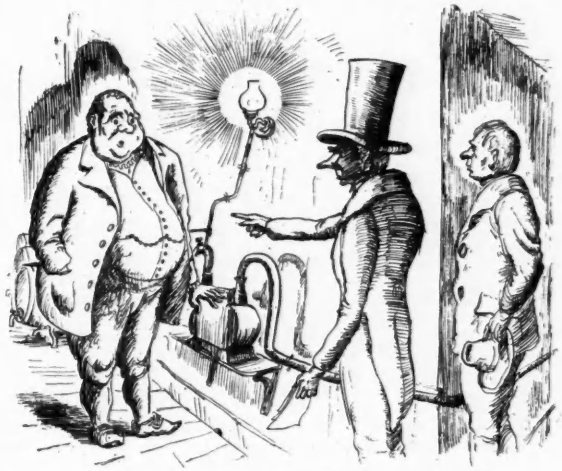
Obituary

Mr. **Lionel G. J. Bratt** died at his home at Budleigh Salterton on October 19. Mr. Bratt had been in retirement for some years and was in his 92nd year. He was the founder in 1890 of the Company which bears his name—Bratt Colbran, Ltd. It was to his desire in those early days to give a fireplace service to architects and the building industry, maintaining rigid standards of design and craftsmanship, that the success of the Company was mainly due. Coupled with his powers of creative work were a sincerity and integrity of purpose which earned the respect and friendship of all those with whom he came into contact. The traditions of the Company are faithfully carried on by his two sons and grandson.



100 YEARS AGO

'There is no doubt,' said Mr. Broughton, the sitting magistrate at Marylebone Police Court, 'but a fraud of a most serious description has been committed on the company.' The company to which he referred was the Imperial Gas Company, which had taken proceedings against one William Carruthers, landlord of the New Inn, Bulstrode Street, Marylebone, who, so it was stated, 'did lay or cause to be laid a surreptitious half-inch pipe, 20 ft. in length, from the inlet of his gas meter, for the purpose of lighting three gas lights, with a view to defraud.' The *Journal* of November 10, 1849,



'Ay, and you suspect something else,' he said.

reports the case with commendable zeal and tells how the suspicions of a gas inspector had become excited by the fact that the meter had registered a drop in consumption of more than 50%—a strange occurrence since there were the same number of lights in use. After the inspector, in company with a fitter, had discovered the damning evidence, Mr. Richardson, the chief superintendent of the company, called upon the landlord and stated his doubts. The latter gave a somewhat curious reply. 'Ay, and you suspect something else,' he said, 'but it is for you to prove the guilty knowledge.' He added that he had called his own fitter and had it all removed. Later in court he brought evidence to show that the pipe was in existence before he took the house. His evidence was sufficiently good to make the magistrate dismiss the case, but not before a Mr. Duncombe, who addressed the court in an impassioned speech on behalf of the defendant, had accused the company and its officers of 'going about in a sneaking, backhanded sort of manner.'

Mr. **Percival Gilbert,** Senior Legal Assistant to the East Midlands Gas Board, has died as the result of a compound fracture of the skull following a fall at his home. After serving for a number of years with several firms in Manchester and Nottingham, he entered the gas industry as Solicitor to the Sheffield Company in 1935, when considerable expansion was taking place through the absorption of neighbouring gas undertakings, and he carried the responsibility of the preparation and submission of the various Parliamentary Bills and Orders involved in the expansion. He played an important part in the negotiations for coke oven gas to the South Yorkshire Gas Grid, and his knowledge of the legal and commercial problems involved was probably unrivalled in the gas industry. He was consulted on many occasions by other gas undertakings supplying coke oven gas. He was a member of the Industrial Coke Oven Gas Committee and represented the industry on the War Damage Committee set up by the British Gas Council.

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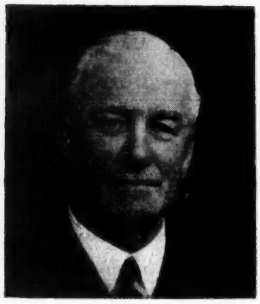
Mr. **J. O. Scott,** one of the Managing Directors of Alder and Mackay, Ltd., gas meter manufacturers, Edinburgh, died suddenly on October 21. He had not been in good health for some two years but was on duty on the morning of the day of his death. Mr. Scott entered the service of the firm in 1894, when he was a boy, and by his integrity and ability he made steady progress in their service as clerk, representative and sales manager. He was appointed a Director in 1932 and all his attention was then devoted to the administrative side of the business. Prior to that he was a familiar figure among gas engineers in Scotland and Ireland. His association with Scottish gas engineers was maintained by his long service as Hon. Secretary of the North British Association of Gas Managers' Golf Circle. Mr. Scott was also a Director of David Grant & Co., Ltd., Edinburgh, and Vanda Meters, Ltd., Nelson, Lancs. Until vesting date he was a Director of Kennoway and Largo Gas Company.



LANCASHIRE BOILER EFFICIENCY

We have received from the Director of Fuel Research a copy of Fuel Research Technical Paper No. 55, 'The Effect of Certain Factors on the Efficiency of a Hand-fired Natural draught Lancashire Boiler.' The Paper is obtainable from H.M. Stationery office at the price of 1s. (by post 1s. 1d.). It is well known that many boilers of the type are operated inefficiently. The Fuel Efficiency Campaign has brought many instances to light. Inefficiency can arise from many causes. Excess of air may be used; unskilled firing may leave holes in the fuel bed on the grate; in many cases too little air is supplied and smoke results.

In Technical Paper No. 55 a study has been made of the magnitude of the various losses due to inefficient operation; and it is emphasised that the losses due to a small decrease below the optimum air supply can be as bad as those caused by a large increase. The smoke made by using less air than the optimum is merely a visible sign of reduced efficiency caused mainly by the invisible combustable gases that invariably accompany smoke. These gases cause four or five times the losses for which the visible constituents of the chimney gases are responsible. The Paper gives precise data to show the effects of varying load on efficiency and the effects of soot blowing. The efficiency of the boiler and superheater reached a maximum of 74 to 75%, using washed singles or smalls, over the range 60 to 80% of full load. The efficiency varied by only 2½% on these fuels over the range 40 to 100% of full load. Soot blowing uses about 0.3% of the steam generated, but avoids losses of efficiency that can amount to 6% after about one month's working without soot blowers.

The information given in the Paper can be applied to measure the cost of inefficient operation. Reference is also made to a practical method of avoiding unnecessary heat losses by the use of a simple, smoke-eliminating fire-door. These doors, designed and tested at the Fuel Research Station, are now being introduced into commercial operation by a number of firms. The fundamental idea is to supply the correct amount of air, not too much or too little, over the fire in such a manner as to burn the volatile matter of the coal in the furnace.

Trials have shown that smoke can be completely eliminated and, with it, the enormous waste of heat in the invisible incombustible gases. To achieve this result does not require elaborate manipulation of the fires or call upon the fireman for any more skill than is required to keep the grates evenly covered with fuel. His only additional duty is to close a flap-valve at a stated interval after closing the furnace door. No fine adjustments of the doors are provided or required to deal with different types and sizes of coal. A constant firing cycle is recommended and, if that is adopted, variations of load merely require corresponding variations in the quantity of fuel fired.

The Paper indicates that the conversion of this type of boiler to pulverised-fuel firing can lead to some gain of efficiency. It points out that many factors besides efficiency require consideration but concludes with the statement that, if correctly fired, a hand-fired, natural-draught Lancashire boiler, fitted with the new fire-doors, may have a thermal efficiency upon which it is difficult to improve by adopting mechanical stoking.

1949 'Journal' Directory

In order to keep the Directory information up to date, the following alterations which have been notified during the past month should be noted in the 1949 issue of the *Gas Journal Calendar and Directory:*

Page 40.—ILFRACOMBE: Delete F. J. Robinson *MD, E & S,* retired.
„ 56.—NOTTINGHAM: Delete R. M. Wilkinson *E & M.*
„ 70.—SPALDING: H. M. E. Leyshon *Dep E vice* W. J. G. Bryce.
„ 70.—SUDBURY: Delete C. G. Grimwood *MD,* retired: C. E. Grimwood *E* becomes *E & M.*

Diary

Nov. 3.—Scottish Junior Gas Association (Western District): Evening Visit to Clydesdale Steel & Tube Works, Stewarts & Lloyds, Ltd.

Nov. 3.—London and Counties Coke Sales Circle: 'Approved Coke Burning Appliances: The Present Position and Future Developments,' Dr. F. J. Eaton (North Thames Gas Board). Gas Industry House. 2.30 p.m.

Nov. 4.—Northern Junior Gas Association: Meeting. Newcastle-upon-Tyne. 'Water Softening,' W. J. M. Cook, Chief Chemist and Technical Manager, 'Neckar' Water Softener Co., Ltd. 2.30 p.m.

Nov. 5.—Western Junior Gas Association: Visit to Canon's Marsh Works, Bristol. Film on Lubrication. 'The Inside Story,' Vacuum Oil Co., Ltd., Radiant House, Bristol.

Nov. 8.—Midland Junior Gas Association: Meeting, Birmingham. 'The Development of a Housing Estate,' W. J. Westbrook (Distribution Engineer, Oxford).

Nov. 11.—London and Southern Junior Gas Association: General Meeting. Films on Mechanical Handling.

Nov. 14.—Eastern Gas Consultative Council, Gas Industry House, 2.45 p.m.

Nov. 16.—South Western Gas Consultative Council, Taunton, 11 a.m.

Nov. 17.—Midland Junior Gas Association: Afternoon Visit to Works of George Wilson Gas Meters, Ltd., Coventry.

Nov. 18.—Scottish Junior Gas Association (Western District): 'The Treatment of Effluent Liquors from Gasworks,' J. J. Priestley (W. C. Holmes & Co., Ltd.).

Nov. 23.—London and Southern Junior Gas Association: Visit to E.M.I. Works, Hayes, Middlesex.

Nov. 24.—North Thames Gas Consultative Council, St. Ermins Hotel, Westminster, 2.30 p.m.

Nov. 25.—Eastern Association of Gas Engineers and Managers: Autumn General Meeting, Waldorf Hotel, London. Presidential Address, C. E. Grimwood.

Nov. 29.—Midland Junior Gas Association: Meeting, Birmingham. 'Carburetted Water Gas,' S. C. Crathorn (Birmingham).

Decentralisation the Gas Industry's Watchword

Annual Meeting of the Southern Association

THERE was a large attendance at the Annual General Meeting of the Southern Association of Gas Engineers and Managers at the Connaught Rooms, London, on October 25, when Mr. **L. P. Ingram** (Deputy General Manager of the Northern and Southern Divisions of the South Western Gas Board), on the completion of his year of office, inducted as his successor in the Presidential chair Mr. **J. H. Dyde** (Deputy Chairman of the Eastern Gas Board).

In inviting Mr. Dyde to take his place Mr. **Ingram** congratulated him on the high position he had attained in the industry and said he was eminently suitable to fill the chair of the Association.

Mr. **Dyde,** on taking the chair, said one of his first duties as President was to present to Mr. Ingram a pair of candlesticks as a memento of his year of office. He had been struck by the genial and cheery way in which Mr. Ingram had conducted their meetings and he recalled with pleasure the reception which Mr. Ingram, in company with Mr. W. H. Bennett, until vesting date the Chairman of the Taunton undertaking, gave the members on the occasion of their summer visit to Taunton and Minehead.

Tribute to Mr. Webber

Mr. **Ingram,** in acknowledging the presentation, said no reply from a retiring President would be complete without a reference to the Hon. Secretary. Whatever success he had achieved had been in very large measure due to the untiring efforts of Mr. Webber, a Secretary in a million.

The *Journal* report of the meeting held on May 24 having been approved as the minutes of that meeting, the **Secretary** reported the receipt of apologies for absence from 19 guests and nine members.

A telegram was received from Mr. G. le B. Diamond, Chairman of the West Midland Gas Board and a past President of the Association, wishing the President a very successful meeting.

Resignations were received from Messrs. E. E. Calvert (Colchester), S. E. Knowles (Eastbourne), R. S. Ramsden (Leamington), C. W. Rogers (Alton), R. E. Taylor (Haslemere), C. Stapleton (Paignton), S. L. Wright (Cheltenham), A. E. Witcher (Haywards Heath), A. E. Williams (Stepney), F. Buller (Manchester), and A. Stokes (Streatham Hill).

The **Secretary** reported with regret the death of Messrs. J. E. Hammond, A. Wells, E. A. Smith, and H. M. Royle.

The annual report and statement of accounts were adopted without discussion on the proposition of the **President,** seconded by Mr. **F. E. Cox.**

There were no new applications for membership, but the meeting enthusiastically endorsed a proposition by the **President,** seconded by Mr. **H. H. Brown** (Exeter) that Mr. J. H. Cornish (Bridgwater) should be elected an Honorary Member in recognition of his long and valued service to the Association. The President said Mr. Cornish had served the industry in the west country for a period of 66 years, starting as junior clerk and finishing as Managing Director of the former Bridgwater Gas Company. He had held many offices in the industry and had helped many young men in their careers.

Mr. Brown mentioned that Mr. Cornish's son was now Chairman of the Western District.

Mr. D. L. Brown, who had ceased to participate actively in the gas industry as a result of his appointment as Principal of the School of Gas Turbine Technology, was transferred from Membership to Associate Membership.

Mr. Ingram was reappointed as the Association's representative on the Council of the Institution of Gas Engineers.

The **President** said it had been hoped that there would be a report on the negotiations regarding the future relationship between the District Associations and the Institution. Members of the Southern Association had by common consent agreed to a form of constitution as District Members of the Institution which he thought was generally acceptable in broad outline. There was still to be settled the question whether the District Association would conduct its own finances or whether the Institution by virtue of raising the general subscription would become responsible. A meeting of the General Purposes Committee of the Institution had been called for Nov. 1 to meet representatives of the District Associations.

Presidential Address

Mr. **Dyde** then delivered his Presidential address, which will be published in a later issue.

Mr. **S. E. Whitehead,** Deputy Chairman of the Southern Gas Board, proposed a vote of thanks to Mr. Dyde for his up-to-date and topical address which he said had been fascinating to everyone who had heard it. They knew they could expect a good address, but what had surprised him was that any Deputy Chairman could find time to write such an address. Nationalisation had been rushed, and the various area boards had not had opportunities for consultation and for comparing notes, and for that reason Mr. Dyde's address was very welcome. He was interested to see how closely the set up in the Eastern area resembled that in the Southern area. There were some differences, in that in the south they had fewer committees and smaller staffs at divisional level, but in principle their schemes were similar. Decentralisation must be their watchword throughout. Decentralisation meant the smallest practicable headquarters staff and the delegation of the maximum amount of responsibility and authority to the local and district managers. In the two areas under review such a scheme worked well, and from the human point of view people generally were fairly happy under the arrangement. Mr. Dyde had mentioned other problems, prominent among which were capital expenditure and the high cost of plant and mains, and the tremendous problem of dealing with the very small works that had been neglected, in many cases through no fault of their own, and were in a parlous condition. They must be kept going in the hope that when better times came they could be linked up.

On the question of effluents, especially as the result of integrations, he supported Mr. Dyde's plea for close co-operation between the gas industry and the sewage experts. Largely as a result of steps taken by the Midland Association such co-operation was forthcoming, and he hoped there would be close co-operation between the Council of the Institution of Gas Engineers and the Institution of Sewage Purification. Reference had also been made to the high cost of purifiers and purification. They all realised that the present system of dry purification was a reflection on a 150-years-old industry and it was satisfactory to know that efforts were being revived to introduce other processes to do away with expensive purifier boxes. He felt a plea should be made for a relaxation of the H_2S regulations. It was quite illogical that they should have to carry on with the old H_2S test, perpetuated by the gas quality regulations, under which gas must be free from H_2S, and even a fraction of a grain per 100 cu.ft. might get them into trouble, while they could retain 20 to 30 grains of another form of sulphur. They had talked for years of reducing the sulphur content of the gas. If they could get some relaxation even to the extent of half or one grain of H_2S it would help those who were trying to develop alternative processes, liquid purification, and so forth.

Two Dangers

Sir **Ernest Smith** seconded the vote of thanks and said one of the most fortunate things the industry had had in recent times was the address presented to the Institution of Gas Engineers in June by Sir Edgar Sylvester. He knew, apparently instinctively, that the only possible way of making the industry still more successful was to create the right spirit in the new organisation, and he suggested that the second passage quoted by Mr. Dyde be regarded as the Bible of the industry. The only justification for nationalisation—which incidentally he had favoured for many years—was the fact that it gave opportunity to the industry itself to put its house in order, relatively efficient though it was, particularly in regard to the smaller undertakings. He was very glad that gas had been the third fuel industry to be nationalised, because the obvious defects of other nationalised concerns had been very largely, almost entirely, obviated in the Gas Act.

In welcoming facilities for putting their house in order they had to be particularly careful that there should not be any unnecessary over-planning; that, he suggested, was the greatest danger that faced the industry today. The newly appointed staffs of the area boards might be disposed to feel that they ought to do something to justify their existence, whereas it would probably be better for them to settle down over a period of up to one or two years and to study the reasons for the condition in which they found the individual undertakings, and to apply specialised treatment to particular

only when it was fully justified. There was a very definite fear on the part of local authorities and other organised bodies that the price would inevitably go up because of overloading with head office controls—not at Gas Council level but in the areas and divisions. Another danger was that when an officer was transferred from a single undertaking to have charge of a number of others he might feel, with his limited experience, that 'the other fellow' was not doing the right thing if it happened to be different from that to which he was accustomed. There was much good material among such men, but he suggested that they should take time to settle down.

The **President** briefly acknowledged the vote of thanks and the meeting then adjourned for tea.

Undiminished Strength and Virility

A large number of guests were welcomed at the luncheon which preceded the meeting.

Dr. **H. Roxbee Cox,** B.SC., PH.D., F.R.AE.S., M.I.MECH.E., Chief Scientist of the Ministry of Fuel and Power, proposing the toast of the Association, said it was now in its 74th year—a venerable association of engineers which showed no diminution whatever in its strength and virility. Many things had happened since the early days when Murdoch first lit his employers' works with gas, but the achievements of the past were quite likely to be matched by the achievements in the industry in the future. There were many great things yet to happen, and he felt he would be disappointing some of his friends if he did not mention the gas turbine which, striking though it might be, was not yet run on gas. There were many great possibilities ahead. The industry had for many years been investigating problems of complete gasification, gasification under pressure, and the possibilities of gas grids, and great achievements appeared to be just round the corner. He had not been long in his present sphere of activity but in a short time he had had enormous help from members of the gas industry and the other industries with which his Ministry was associated. Prior to his joining the Ministry he was associated with aeronautics, and he commended to them the benefits, from many points of view, of the sport of 'flying' in gas-filled balloons, although at the present time town gas was not generally used for that purpose. He coupled with the toast the name of Mr. J. H. Dyde, the 71st President in a long line of eminent men.

Adaptation to Change

The **President,** responding, said he had hoped that his first Chairman, Colonel R. L. Norrington, of the former Plymouth and Stonehouse Gas Light and Coke Company, would have been present so that he might have acknowledged his help and encouragement in his early days, but indisposition had kept him away. Moving from one undertaking to another involved the making of new confidences, and at every stage he had met with nothing but friendship and understanding from the people who had been in control of the gas industry. He hoped that in the larger organisations now taking shape in the industry that same personal interest would be maintained. He was particularly glad to welcome Sir Edgar Sylvester, and he wanted to say how fortunate he felt in his new sphere to be Deputy to so genial and fine a Chairman as Sir John Stephenson. More than one humorist had referred to Sir John and himself as 'the plumber and his mate'; the mate was learning from a great master, a real craftsman among men.

Since its formation in 1875, a year marked by many other historic events, including the first recognition of trade unionism, the Association had increased in strength and its membership now numbered about 350. They could justly claim that the Association had adapted itself to changes in the structure of the industry, and especially the great legislative change which began on May 1. It sought to devote its constitution and its objects to the technical advancement of the industry and the technicians who served it. To that end it sought no mere affiliation to the Institution of Gas Engineers, but to become an active district section of it; to decentralise much of the work of the parent body by extending the platform on which men interested in the manufacture, distribution, and utilisation of gas could discuss their problems in an atmosphere devoid of business policy and politics. Policy considerations must obviously be the province of the Gas Council and the area boards, but members of the Association jealously reserved the right to a free platform for the scientist and the engineer. There was a vast fund of accumulated knowledge and a spring of inventive genius and skill among the members that, given the opportunity to develop, would assist the industry, through the Gas Council, in fulfilling to the full the third schedule of the Gas Act—the schedule covering technical provisions relating to gas supply.

The Visitors

Mr. **T. C. Battersby,** Senior Vice-President, proposed the toast of the visitors, among whom he particularly mentioned Sir Edgar Sylvester and Colonel H. C. Smith, Chairman and Deputy Chairman of the Gas Council; Mr. O. R. Guard and Mr. S. E. Whitehead, Chairman and Deputy Chairman of the Southern Gas Board; Mr. W. K. Hutchison, Chairman of the South Eastern Gas Board; Sir John Stephenson, Chairman of the Eastern Gas Board; Mr. F. M. Birks, Vice-President of the Institution and Deputy Chairman of the North Thames Gas Board; Dr. W. T. K. Braunholtz, Secretary of the Institution; Mr. E. C. Woodall and Mr. R. Turner, of the Eastern Gas Board; Dr. Roxbee Cox, Mr. R. Kelf Cohen, of the Ministry of Fuel and Power; Mr. F. G. Brewer, Secretary of the Gas Council; Dr. A. Parker, of the Fuel Research Station; Dr. D. T. A. Townend, President of the Institute of Fuel; Mr. W. A. Damon, Chief Inspector of Alkali, &c., Works; Sir George Evetts, and Sir Ernest Smith.

Great Opportunities

Mr. **O. R. Guard,** Chairman of the Southern Gas Board, replying to the toast, welcomed the opportunity of expressing publicly, as he had already done many times privately, his great appreciation of the reception given to him as a stranger to the industry when he took up his duties at the beginning of the year. It was not for him to discuss the merits or demerits of nationalisation, but he believed that the new set-up held out enormous opportunities for the younger men in the industry. While knowing little about the Association he observed that both engineering and management were embraced in its title, and its members had brought something more into the Association—comradeship and friendship. There had never been a time in our history when comradeship was more needed. Those at the receiving end of the industry must realise their opportunities and see that the fruits of the technical skill and the service of those represented by the members of the Association were made available to the public, the consumers.

The Northern Gas Board is planning the erection of a gasholder at Stockton-on-Tees. It is proposed to reserve a site big enough to hold a further holder at a later date.

On Thursday Last the North Western Gas Board announced that, because of abnormal demands since the cold weather began, gas pressures would be reduced in the Manchester and Salford areas.

During the Night of October 20 fire broke out in the offices of Purimachos, Ltd., Bristol, manufacturers of fire cements. Fortunately the damage was confined to a section of the offices; the works were unharmed and production and deliveries have not been interrupted.

The Former Rhondda Valley and Rhymney Valley and Merthyr Vale Groups under the Wales Gas Board have now been combined, with the Deputy Chairman of the Board, Mr. R. S. Snelling, as Group Chairman, and Mr. D. I. Rowlands, of the Rhymney and Merthyr Group, as Convener. The new title of the group is the East Glamorgan Group.

The Third Highest weekly total for coal output this year was recorded in the week ended October 22 at 4,398,700 tons, compared with 4,342,700 tons for the previous week. Manpower showed a further decline of 800 over the same period, including a loss of 200 face workers. Gas available at gasworks for the week ended October 21 amounted to 9,474.8 mill. cu.ft., against 9,140.5 mill. in the previous week, and 874.7 mill. units of electricity were sent out from solid fuel fired stations for public supply.

Members of the Coventry District Advisory Committee, which represents the Midland Regional Board for Industry in the area, visited the works of George Wilson Gas Meters, Ltd., at the invitation of Mr. W. D. Wilson, Managing Director, who is also a member of the Coventry Committee. The visit was in the nature of an experiment, as it had been suggested that the members might visit various works, and thus become acquainted with the methods employed in the different industries. This proved of great interest, since the majority of the visitors had never previously seen gas meters in their production stages.

Testing Time for Tar

Minister of Transport's Support for British Road Tar Association

THE annual dinner of the British Road Tar Association was held at the May Fair Hotel, on October 25, the President, Colonel H. C. Smith, C.B.E., J.P., D.L., Deputy Chairman of the Gas Council, presiding.

Mr. **J. Davidson Pratt,** C.B.E., Chairman of the Managing Council of the Association, proposed the toast of the guests, welcoming one Minister of the Crown, one Permanent Secretary, senior officials of five Government Departments—the Admiralty, Department of Scientific and Industrial Research, Ministry of Fuel and Power, Ministry of Health, and the Ministry of Transport—representatives of the National Coal Board, and the Presidents, Chairmen, Secretaries and other officials of technical, professional, and industrial organisations with which the Association co-operated. He extended a special welcome to the Honorary Director-General of the Roads Department of Belgium, together with some of his colleagues. They had been in Britain seeing what excellent roads we made with tar and he hoped they had seen everything they wanted and had not been disappointed. Claiming the privilege of Chairman and anticipating the decision of the Managing Council on the following day, he assured them that the British Road Tar Association would be pleased to place at their disposal all their advice and technical literature, which he hoped they would disseminate to the various technical bodies on the Continent.

He also welcomed Chairmen and/or the Deputy Chairmen of eight of the area gas boards, whose presence, together with that of their own President, who was Deputy Chairman of the Gas Council, was a fine omen for the future. He also welcomed the numerous guests brought by their own members. He regretted the absence of the Parliamentary Secretary of the Ministry of Fuel and Power, and also of the Permanent Secretary of that Department, but he was glad that the Department was represented.

Marketing Problems

There was, and had been for a long time, great competition between coal and oil and their derivatives which looked like becoming more intense. They in the British Road Tar Association were interested in bitumen, which was well known to be a fine road making material, produced in this country from imported crudes. As a result of Government policy, not objected to by the Association, to install refining and cracking plant in this country there would be produced as a by-product a great deal more bitumen than ever before. At the same time he understood that their coal carbonising friends proposed to extend their carbonising activities and produce even more coal tar than ever before. The question inevitably arose—where were the markets going to be found for all that material. The Association felt that the appropriate Government Department, the Ministry of Fuel and Power, ought to look into the question and decide on some lines of policy so that the industries concerned could be advised what to do, rather than that matters should be allowed to slide. He could assure them that the Coal Tar Research Association and the British Road Tar Association would do everything possible to help in solving the problem. They wanted adequate and satisfactory markets for those products derived entirely from our native coal which had no dollar contact whatever.

Use of British Standards

His next point was to plead with Government Departments which had co-operated in the preparation of British Standard specifications to utilise them instead of variants of their own which tended to militate against that productivity that they all wanted at the present time. He would like to regard the Ministry of Transport as the guardian angel of Britain's roads. Mr. Barnes came two years ago to the Association's 21st birthday celebration and delivered a most inspiring speech and presented them with a commemorative key which they had sent to the British Museum. They had never had to use that key because the door—the Ministry of Transport—had been open to them whenever they liked to use it, and they desired to thank the Minister and his officers for their willing co-operation. He particularly wished to thank Major H. E. Aldington, formerly Chief Road Engineer, to whom they wished every success in his new office, and his successor, Mr. Hugh Jones, with whom they looked forward for much co-operation.

Personally, he thanked the Minister for the very courageous remarks he had made a few days previously. It was time that people realised that they were faced with an economic Dunkirk, and there was only one way out—harder work on the part of every one of them; and he hoped Mr. Barnes would continue saying what he had said. He had discovered nothing in the Prime Minister's speech on the financial situation relating to roads, and he was optimistic enough to hope that there were going to be no cuts, though they must realise that they could not expect any great addition to the funds for the maintenance of roads, nor could they expect the immediate development of new roads, to which they attached some importance. He felt, however, that they might use the waiting period until they got those new roads to great advantage. They had many ideas as to new and more economical and more efficient methods of constructing roads which they would like to see tried out in practice. They had difficulty in getting facilities for such tests, and he would ask whether the Ministry could set aside some money to enable them to try out some of those new methods which would be to the national advantage.

The **Right Hon. Alfred Barnes,** M.P., Minister of Transport, in responding to the toast, said there was a simple explanation regarding the absence from the Prime Minister's financial statement of any reference to cuts on roads—they had already been shorn before. Although he had never hesitated at functions of that kind to recognise quite frankly the difficulties the road industry was in, it was a fact that the road was one of those physical aspects of the country that could always be held back a little at times of financial stringency in the hope that arrears could be made up subsequently when circumstances became more favourable. They had to face the fact that in their own lifetime, owing to the consequences of two world wars, we had fallen hopelessly behind in this country in the development of modern road systems.

He had been particularly interested in the comment which Mr. Davidson Pratt had made with regard to standardisation. He observed on looking through the list of guests that the gathering included many who were connected with the scientific side of industry, and indeed his own Department was becoming very largely a scientific and industrial research department, and a good deal of experimentation and expenditure was being directed to the purpose of road improvements. Certainly he and his officers and the road engineers would take note of the point that Mr. Davidson Pratt made with regard to the use that might be made of the interim period. The time might be used valuably by increasing road experiments. The matter would be looked into very closely and he would certainly approach the general problem of using the period during which they were unable to embark on large-scale modernisation in the direction which had been indicated.

Legislative Limitations

When he went to the Ministry of Transport after the war and desired to embark on a considerable policy of road extensions he found that the legislative powers of the Minister were limited in certain vital directions. As a matter of fact that limitation had not in any way prevented him from getting on with any proposal in which he was particularly interested. He had recognised, however, that even if financial circumstances had been more favourable the powers of the Minister were not adequate to carry out certain essential programmes today. They had been fortunate enough to carry certain legislative proposals which would be extensively available to his successors in the future, even, he hoped, before the end of the present Parliament, which no doubt many of them were longing to see.

He had been surprised to learn that the total output of crude tar was of the order of 2¼ mill. tons annually, and he was beginning to understand why the Association had such a warm affection

(continued on p. 290)

Rapid Growth in Wales Gas Demand

Mr. Mervyn Jones Outlines Grid Schemes

AN invigorating and encouraging address was given by the Chairman of the Wales Gas Board, Mr. T. Mervyn Jones, at a meeting of the Gas Consultative Council for Wales held at Swansea on October 21.

The 109 gas undertakings scattered over the 8,000 odd square miles of Wales and Monmouthshire, he explained, served in the month of August the needs of 411,313 consumers, selling them 5,763,101 therms of gas, using for the purpose that month 39,453 tons of coal. In the process they made 14,947 tons of coke and 394,094 gal. of tar, not to mention many other by-products, and employed 4,268 persons. 'These figures,' he remarked, 'are taken from the summary of working results which are compiled by us at headquarters each month from records sent in by all our undertakings.'

'You may,' he continued, 'care to remember three points about our board: we serve more than 400,000 consumers; we use on the average more than 40,000 tons of coal a month; and we employ more than 4,000 persons. I may mention one other figure. In August last, summer month though it was, we acquired nearly 400 more consumers.'

He referred to the wide variety in the size of undertakings, from Presteign supplying 3.5 mill. cu.ft. of gas per year to Cardiff supplying 2,121 mill. cu.ft.

Eastern Grid

Mr. Jones went on to explain that early in the current year the Wales Gas Board was informed by the National Coal Board of their plans for the construction of a new coke oven installation at Cwm, two miles south of Pontypridd, in addition to the plant already being built at Nantgarw. The board immediately instructed its technical officers to revise the scheme previously prepared by the Minister's committee so that, should negotiations lead to a contract for the purchase of gas from this plant, it could be incorporated in the scheme. This work and certain other revisions of the earlier scheme have now been completed and applications made to the Gas Council and the Ministry of Fuel and Power for approval and for authority to incur the necessary expenditure.

The total cost of the scheme for the eastern section is estimated at £1,705,000, of which £257,000 has already been expended. The balance is expected to be spent during the period 1950-54. When completed 136 miles of main varying in size from 6 in. to 18 in. diameter will have been laid, interconnecting 24 undertakings. Production of gas at 12 gasworks will cease and be concentrated in the works at Pontypool and Cardiff, augmented by supplies of coke oven gas from seven coke oven plants and the Phurnacite plant of the National Coal Board at Aberaman. Supply to the Aberdare undertaking from the Phurnacite plant commenced during the current month.

The quantity of gas to be distributed is estimated to reach 13,400 mill. cu.ft. in 1960, compared with 8,300 mill. cu.ft. in 1948, an increase of 60%. Supply would be given from the Rhondda in the west, to Usk in the east, and from Barry in the south to Brynmawr in the north.

Western Grid

The scheme prepared by the Working Party set up by the Minister was estimated to cost £1,344,000, of which £350,000 has already been or is authorised to be expended. The total mileage of mains involved in the first stage is 68 and gas would be supplied to 13 undertakings. Thirty-two miles have already been or are in the process of being laid. The quantity of gas for which it has so far been possible to contract with the Steel Company of Wales is sufficient to enable some of the smallest and least efficient gasworks to be closed and the board's officers are at present engaged upon the preparation of schemes for reconstruction either at a single centralised unit on a new site or on the existing sites. The possibility of making use of gas from the Llandarcy plant of National Oil Refineries is also being investigated.

The quantity of gas required in the western district was estimated at about 8,000 mill. cu.ft. per year by 1960, compared with the quantity of about 3,250 mill. cu.ft. in 1948. Recent developments in the Vale of Neath indicate that this estimate may be too low.

The total number of consumers served in the South Wales Grid area is at present 315,000, representing a population of about 1,250,000.

North Wales Grid

Immediately upon its formation the Wales Gas Board put in hand preliminary investigations into the possibility

(*continued on p. 293*)

B.R.T.A. (continued from p. 289)

for the officers of his Department and for road engineers generally. He had not realised that it would take the whole of the roads of this country to consume approximately 80 mill. gal. of road tar a year. Taking the surface dressing of all roads the consumption would amount to some 400,000 tons of tar, or about one-sixth of the product of their industry.

Lord **Sandhurst**, O.B.E., Chairman of the British Road Federation, proposing the toast of the Association, traced in outline the development of the use of tar on the roads since the time when cycling was a much less pleasurable pastime than it was today, and when ladies wore large hats over which they spread large veils to keep the dust from their faces. In the earliest stage the tar manufacturer merely put the tar on the road and it was left there for anybody who walked or cycled along the road or drove a trap to pick up on their boots or their wheels and spread it more or less evenly over the road surface. Next, somebody thought of the happy idea of spreading the tar with a machine while others came along and threw dust on the top of it. That resulted in a slightly less sticky substance. Later still somebody conceived the idea of dipping stones in the tar before putting them on the road; then they produced tar that was not sticky. It stuck to itself and produced a good road surface on which people could walk and ride in comfort. Today one could proceed down Knightsbridge and, instead of skidding on wood blocks, ride conveniently over a tarmac surface. When brakes were applied one's car stopped—a great achievement in contrast to the early days.

The members of the Association were now working to produce even better road surfaces and to evolve more economical methods of making roads. The main method seemed to him to be to build the foundation in concrete and then to put a really good thick carpet of tarmac on the top. Such process involved two operations and a substantial delay between laying the concrete and finishing off the surface. As one who knew nothing about tar and even less about concrete he wondered whether it was possible to produce a tar carpet which would at once have the tensile strength of concrete and all the expansion and wearing properties, and skid-proof qualities, of the present tarmac surface.

Colonel **H. C. Smith**, President of the Association, in his reply, conveyed a personal apology from Mr. Alfred Robens, whose Parliamentary duties prevented his attendance. The gas industry and the coking industry had now been nationalised and in consequence the Minister of Fuel and Power had become the largest producer of coal tar in this country. In the British Road Tar Association they had representatives of tar produced by the gas industry, the coal industry, and the steel industry. The Association existed to improve the quality of road tar and to further its uses. Lord Sandhurst had recalled the days before the general use of tar on the roads. The application of tar had brought added comfort not only to the motorist but also to the pedestrian and had been partly responsible for a complete change in fashions in footwear.

The Association was deeply interested in research and had carried out a considerable amount of research designed in collaboration with the British Road Research Laboratory to improve the making of roads. At the same time they tried to sell their ideas and to persuade those who were responsible for using tar on roads to do so. They were faced with the possibility that the Association might be reformed. Things were changing and they might have to remodel the Association to meet changed conditions. They must take great care that whatever changes they might make in their set up they did not lose the value of all the good work that had been done in the past. Concluding, he thanked the officers of the Association who had been responsible for making the arrangements for the annual dinner, especially Mr. Davidson Pratt, Mr. Cone, Technical Adviser, and Mr. D. M. MacCormack, Secretary.

North Thames—Structure and Policy

MR. MICHAEL MILNE-WATSON, Chairman of the North Thames Gas Board, gave the North Thames Gas Consultative Council at its second meeting on October 27 a general outline of the structure, responsibilities, and aspirations of the board, with which the council will co-operate in a consultative capacity.

It was the first occasion on which the Press had been invited, and before introducing Mr. Milne-Watson, Mr. Edwin Bayliss, Chairman of the consultative council, assured them that in representing the interests of all classes of consumers the council wished to take the Press into its confidence. From time to time there might be matters which should remain confidential and he was confident that the Press would work in harmony with the council. 'We intend to make this the best gas consultative council in the country,' he added, 'and we are satisfied that the organisation we are setting up, and which we are submitting to the Minister of Fuel and Power, will probably be the best of its kind in the country. Already we have received bouquets from Whitehall for the way we are tackling our job.'

Mr. Milne-Watson explained that on vesting day the area board took over 12 undertakings, one municipal and all the rest company-owned, covering 1,059 sq. miles, a population of roughly 5½ mill., and a total of roughly 1¾ mill. consumers. Unlike any of the other boards it took over one undertaking which was already equivalent to an area board in itself, the Gas Light and Coke Company, whose area had now, for administrative purposes, been divided into six divisions. The other portions of the area were also formed into districts, each with a manager except on the western side, where Ascot, Uxbridge, Slough, and Windsor each had a district to itself with an acting general manager during the transitional stage.

Regular Works Visits

On the engineering side the board had a chief engineer, and each of the 12 manufacturing stations had its own station engineer, reporting through group engineers to the chief. On the commercial side there was a commercial manager, with divisional and district managers entirely responsible for the commercial running of their respective territories and for seeing that good service was given to the consumer. The board itself was much too busy to sit in constant session and it had divided its work into committees—production, commercial, staffing, and supervision—all making regular visits to the works. Each committee included the Chairman and Deputy-Chairman and one or more of the other members of the board, and examined in detail the problems concerned, in consultation with the departmental controllers—the chief engineer, controller of research, group engineers, superintendent of the product works, the distributing engineer, and the like. Minutes of the committees came before the full board for final approval.

Eastward Development

With regard to production, apart from the world's largest works at Beckton the board had 23 gasworks in its area, plus two standby works (Shoreditch and Amersham), and they were linked by the biggest gas grid in the world. Two 48 in. mains laid many years ago conveyed gas right through from Beckton to the west, picking up en route the gas made at the other stations. The board was now preparing a similar development eastwards. Connections were being made and interconnections were being developed between works hitherto separated from each other except for fringe connections laid for emergency purposes during the war. The object of the linking up was in the nature of an insurance policy, the better to balance the load and to utilise the great advantage of sea-borne coal. If all the board's works were remote from sea and river its coal would cost more and the price of gas would tend to be higher. The control room at Westminster was the medium through which the chief engineer and his control staff knew how much gas was in stock at any moment, how much was being made, and whether any troubles were imminent. The running of the chief engineer's department took place through committees held at regular intervals, at which the group and station engineers discussed manufacturing problems.

Dealing with the commercial side, Mr. Milne-Watson said the board was anxious that local managers should keep their authority and responsibility in the districts they served. They had regular meetings with the commercial manager, at which they discussed commercial policy, but as far as possible they were left to settle their own problems of gas and appliance sales and service in their own districts. The chief accountant was responsible for all financial accountancy in the board's area and arrangements had been made to co-ordinate the analysis of expenditure and revenue of the several vested undertakings. Each local unit, however, maintained its own system as far as practicable and dealt with the receiving of payments, whether by cheque, cash, or meter collection, and the payment of wages.

As to personnel, the staff controller, who was assisted by the establishment officer and the labour relations officer, dealt with the general terms and conditions of employment without interfering with the day-to-day administration of the head of the department, district, or division. Recruitment and records of salaried staff were dealt with centrally, but all other personnel were engaged locally, within the framework of the industry's agreements with the trade unions.

On the proposition of Lady Nunburnholme a vote of thanks was accorded to Mr. Milne-Watson for his enlightening talk.

Special Tariffs

In reply to questions, Mr. Milne-Watson said the whole question of special tariffs was being examined, and until some standard had been settled the board did not propose to introduce any new tariffs in isolated cases, such as had been asked for by a consumer in the Romford district. While the board would welcome organised visits he firmly refused to agree that an individual member of the consultative council should be permitted to 'drop in' at any time to look round the works or offices. Such a general permission would serve no useful public purpose and would tend to disorganise the work in hand. Any complaints could be transmitted to the board through the proper channel, the chairman of the consultative council being a member of the board by virtue of his office.

Formal reports were presented regarding the average calorific value of the gas supplied in various parts of the area, and the scheme provisionally drawn up at the previous meeting for the setting up of district committees was confirmed. There was some discussion as to who should be responsible for appointing the chairmen of the district committees, and it was ultimately decided to leave the election in the hands of the committees themselves.

There was also an informal discussion on meter rentals. One member proposed that the area board should be asked 'to consider the discontinuance' of such charges, but on amendment the consultative council agreed to ask the board for information on the matter.

Wales Gas Board (*continued from p. 290*)

of co-ordination of gas supplies in the North Wales area. There are nearly 30 undertakings serving this area between Holyhead and the boundary of the board's area near Chester, and it is hoped to interlink these and to reduce the number of producing stations so as to afford supplies of gas in many districts not at present served, at the same time reducing the costs of production.

A large new carbonising unit at Wrexham had been authorised prior to vesting date and a supply from this new works to the Rhos, Cefn Mawr, and Llangollen areas to the south is to be given as soon as possible. The cost of the new gasworks alone will exceed £500,000, and further expenditure on gasholders and mains will be involved.

The completion of this scheme will take time and priority may have to be given to the industrial areas. However, steps which will fall in with the completed scheme are being taken immediately to improve supplies. As an example, interconnection of the Colwyn Bay, Llandudno, and Conway undertakings is in hand and the provision of a bulk supply to Bethesda and Llanberis is being given consideration.

Pembrokeshire

Centralised production in Pembrokeshire is also a long term objective to which the board is working. As a first step a proposal to supply Tenby in bulk from Pembroke Dock is being worked out in detail. This would, besides improving supplies to Tenby itself, enable gas supplies to be given to a number of smaller communities.

PROGRESS REPORTS ON NEW TOWNS

PLANS FOR GAS SUPPLIES TAKE SHAPE

REPORTS for the year ended March 31 from eight of the nine development corporations established under the New Towns Act have been published for the Ministry of Town and Country Planning by the Stationery Office. Six of the reports provide information on the development of gas supplies to meet the anticipated increase in demand from domestic and industrial consumers; Peterlee in Northumberland and Welwyn Garden City, in Hertfordshire, where development is probably least advanced, have no comment to make.

At Crawley, in Sussex, where a pilot scheme for 34 houses has been completed, the Croydon, East Surrey and Horley undertakings of the South Eastern Gas Board have combined with the Ministry of Fuel and Power to prepare a detailed scheme for the supply of gas. The report says that the scheme provides for the expansion of the Waddon works of the Croydon undertaking to meet the combined needs of their own area, the new town of Crawley, and the area of supply of the East Surrey and Horley undertakings. The existing supplies to Crawley are by main from the manufacturing plant of the Horley undertaking and will continue to serve the town until the new works, which have already started, are completed. In conjunction with the gas undertakings and the Ministry of Fuel and Power, the development corporation has prepared a layout of mains throughout the town, and extensions to serve new development are already being made.

Mains at Hemel Hempstead

The existing gasworks at Hemel Hempstead, in Hertfordshire, is considered to be inadequate to meet the needs of the new town, and discussions have been started with the Watford and St. Albans undertaking about its transfer. Its removal would be linked to the schemes for regional gas development, where additional manufacturing capacity will be needed. A scheme for main gas supply has been agreed in outline with the Watford and St. Albans undertaking; a 12 in. main has been laid from Apsley to the Adeyfield area of the existing town to improve supplies; and distribution mains have also been laid to cater for future development.

A similar scheme 'to avoid the necessity for a gasworks' in the new town has been adopted by the Harlow corporation. By an agreement between the Ministry and the gas undertakings bulk supplies will be provided by the Bishop's Stortford, Epping and District undertaking and the St. Margarets undertaking. The siting of the main pipeline and gasholders proposed by the corporation is under examination and it is hoped that work will soon begin. The surplus of gas at present available is small. The other two development corporations in the London area, Hatfield and Welwyn Garden City, anticipate no difficulty in supplying the full requirements for their new towns.

At Aycliffe, in Durham, where the erection of 41 aluminium bungalows allocated to the new town by the Ministry of Health has been completed, the Durham undertaking has arranged a temporary supply of gas to the housing site from a 6 in. main serving a nearby trading estate. Work is also advanced in the preparation of a scheme for the laying of a new main and for the construction of storage gasholders to provide an adequate and permanent supply to the new town.

District Heating Schemes

A curious feature of the report, not without interest for the gas industry, is the varied experience of the corporations with district heating. Aycliffe hopes to supply hot water and area heating to every building in the new town, which will have an approximate population of 10,000, with the exception of existing bungalows and one housing site. The scheme is designed on the assumption that the corporation will acquire and generate steam from a boiler house on the trading estate. The corporation states: 'We consider the scheme to be a practical and economic proposition and this opinion has been confirmed by the District Heating Sub-Committee of the Ministry of Fuel and Power.' The corporation is awaiting the approval of the Ministry to go ahead and is also promoting a Private Bill to vest the corporation with the requisite statutory powers to provide district heating.

Crawley, however, is not convinced that installation for the whole town would be an economic proposition. Crawley, the report says, is remote from a coal field and the generation of electricity in the town is not contemplated; this rules out the possibility of a thermal electric installation. Nevertheless, in preparing detailed development plans, the corporation is 'examining the costs of installing limited projects for the distribution of heat generated at a central point.'

Hemel Hempstead has come to the same conclusion, influenced by 'the nature and amount of existing development and the difficult topography.' Plans are in hand for an experimental scheme to serve the centre of the first neighbourhood, and 'experience therewith will determine further application.'

Shortage of Labour

Of more general interest, the document records details of progress—or lack of progress. The difficulty in building up an adequate labour force appears to be the most difficult problem affecting those corporations which have already advanced beyond the 'planning' stage. Aycliffe regrets 'that assurances given to us 12 months ago that a sufficient supply of suitable local labour would be available to meet our requirements have not been fulfilled.' Work has been retarded in consequence, and labour has had to be imported with the result that travelling and subsistence expenses have had to be added to contract prices. 'The labour position is so acute,' states the corporation, 'that we now realise that if we are to complete our task within the time we have set ourselves, we will have to take action to attract building and civil engineering labour to the new town.'

Hemel Hempstead has the same tale of woe to tell. The corporation still has 'disappointingly little construction to show for its year's work,' and forecasts difficulties in achieving a rapid build-up of a labour force which should reach 3,000 men over four or five years. 'The Ministries of Works and Labour advise that the Eastern Region is incapable of any material contribution; labour, they say, must be drawn mostly from London. But London labour may not easily be recruited; and nobody knows whether it will live in hostels or travel daily. In either event, subsistence or travelling allowances will add considerably to costs.' Harlow refers to the fact that 'the Ministry of Labour will not permit operatives living locally to be employed on new town development,' and that it must rely on men who can either be persuaded to travel some distance or to live in a local hostel.

Each report expresses the hope of greater things to come during 1949-50. Although the Government has given its assurance that new town development will proceed in spite of the cut in the housing programme, the general reduction in the annual rate of house building will equally affect the work of the corporations and retard constructional progress.

Billingham-on-Tees Urban Council has been informed that the Northern Gas Board intend to make a charge of 65s. per house towards the cost of service pipes. No charge has been made in the past for this work. The Council has informed the board that, in its opinion, the provision of gas services was the board's responsibility and the Council was not prepared to pay the charge unless, in making the charge, the board intended to reduce the price of gas.

Presenting Long Service Awards to 18 employees of the former South Staffordshire Mond Gas Company (now a unit of the West Midlands Gas Board), Mr. W. Edgar Hale, former Chairman, referred to the founder of the Company, Sir Ludwig Mond, who, he said, laid the foundation of Imperial Chemical Industries, Ltd. The Mond Gas Company meant something to the whole world, for it was in that concern that the idea of securing nitrogen by artificial means for the benefit of mankind first took shape. He paid tribute to the members of the Mond family, who, he said, invested a considerable sum of money in the Company and lost most of it. Mr. G. A. Matthews, Deputy Chairman of the West Midlands Gas Board, presided at the presentation ceremony.

GAS FOR CREMATION

By A. DOCKING, M.I.P.E.,
Radiant Heating, Ltd.

***EDITOR'S NOTE*:—The prejudice which once overhung cremation has long been dissipated, but the number of crematoria operating in this country has not risen in accordance with the increased demand. The possibility of another two hundred crematoria being constructed is of great importance to the gas industry, and in this extract from a paper presented to the Scottish (Western District) Salesmen's Circle, the author comments on factors influencing furnace design and other pertinent matters.**

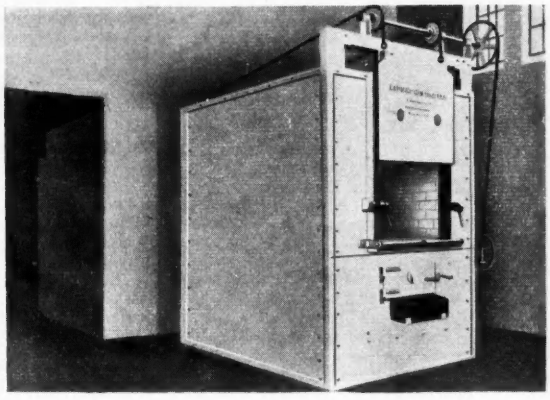
'THE principle of cremation is today debated with less frequency, so much so that the argument for and against, formerly a live topic, has become almost a matter of history. The aspect of reverence in face of departure of a beloved friend, the hygienic factor, inherent in the disposal of the dead body, consideration for the living, economy and (that last bogey of all) the detection of crime, all these questions have ceased to be of major interest. To many people, the announcement that an intelligent citizen has willed his body to be cremated causes less surprise than that he has left it to be buried in the earth.' These words were written by none other than the Rt. Hon. Lord Horder, President of the Cremation Society. However true they may be, it is none the less surprising to find that many people are completely unaware of the fact that of the 58 crematoria existing in this country in 1944, no fewer than 43 were gas-fired, the remainder being either equipped with electric or solid fuel furnaces. The number of furnaces, of course, was far in excess of the figures quoted because there may be as many as eight furnaces in a crematoria.

There are plans being laid to sanction the construction of approximately another 200 crematoria, so that the opportunity which exists for the gas industry to capture one more useful load can be appreciated.

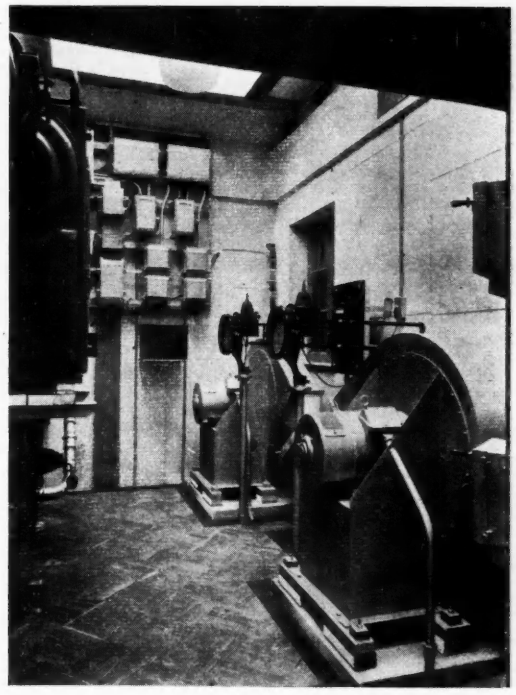
It will be recalled that the first crematorium was built in this country in 1878, but that cremation was declared illegal in 1879. In 1885, however, cremation came into its own again, although no statutory rules and regulations to govern the practice of cremation existed until the passing of the Cremation Act in 1902. In 1885 there existed one crematorium which carried out three cremations in that year. By 1944 there were 58 crematoriums and the number of cremations for that year was just over 39,000. Another point of some interest is that the total number of cremations carried out between the years 1885 to 1937 was approximately half the total number carried out in the period 1938 to 1944. The technique of cremation is very interesting, and if properly explained can do much to remove any slight prejudice which may exist. The body consists of the following materials which can conveniently be divided into two groups: Skeleton, composed of inorganic salts, in the main, and calcium phosphate; and flesh, &c., composed of fats, inorganic salts, proteins, organic extractives and water.

Water amounts to some 75-80% of the whole, while the rest is basically the elements carbon, hydrogen and nitrogen. In a body of average weight, there will be about 100 lb. of water, which requires a theoretical input of 11,300 B.Th.U. to cause dispersion. In dropsical cases, the time required for dissolution is much longer because of the larger quantity of water present. Special care must be given to the design of the flueways if considerable trouble is not to be experienced from the large amount of water vapour present in the products of combustion. As long as the temperature in the flueways is maintained above 140°F., little trouble will be encountered

(*Continued on p.* 298.)

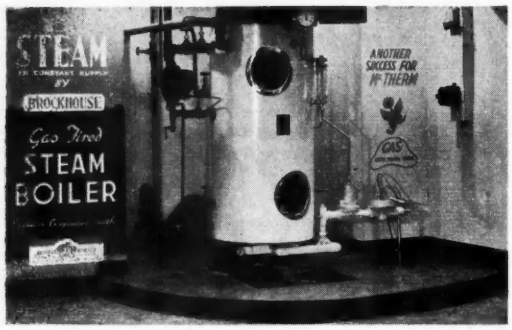


The cremation furnace, shown above, has a maximum consumption of 1,500 cu.ft. per hour and an average hourly consumption of approximately 500 cu.ft. The incinerating chamber is 7 ft. 6 in. long and 2 ft. 8 in. wide with a height of 12 in. to the crown of the arch. It will carry weights up to 20 stones.



The fan and instrument room at the Putney Vale crematorium (right) comprises two fans complete with motors, a diaphragm control valve to cut off the main gas supply in the event of fan failure, two slow meters registering gas consumption at any one moment, and indicators for the pyrometers.

IN ACTION AND ON DISPLAY



Our photograph shows the Brockhouse gas-fired steam boiler installation at the 'Festival Cavalcade' exhibition sponsored by the St. Cuthbert's Co-operative Association in the Waverley Market, Edinburgh. The display was, as indicated, another success for Mr. Therm.

The exhibition attracted 130,000 visitors. The boiler was installed in one of the main avenues, and the Edinburgh gas undertaking accepted the responsibility for building the stand round the fixed position of the boiler and carrying out the décor and publicity work. The boiler was a 'live' exhibit and was servicing the steam requirements of the laundry section and the hot water requirements of the kitchen and restaurant. The staffing arrangements of the stand were provided by the manufacturers' agent.

Gas for Cremation (Continued from p. 297)

with refractories, recuperators, chimneys, and the like.

In life, the body is sustained by the process of oxidation and it will be readily seen that the cremationist makes use of this process in its most rapid form in order to bring about the final resolution. The incinerating chamber is brought to a temperature of approximately 700°C. ready to receive the coffin. Once the coffin is well alight, the gas may be turned off and heated air may be blown in to the incinerating chamber to resolve the contents to ashes.

There are, of course, wide differences in the state of bodies received for cremation. Where death has occurred through cancer or other wasting disease, the fierce combustion which has run its course in life has already accomplished some of the work the cremation furnace is required to do, with the result that much of the fats and organic extractives have already been burnt. In these cases, the dehydrated and emaciated body requires prolonged treatment at a higher temperature and will also probably require localised combustion. Thus, it will be appreciated that there is a lot more in the design of a cremation furnace than may at first meet the eye. Maintenance and running costs are as low as can possibly be reached with efficiency.

Variations in Design

Crematoria superintendents have many varied ideas as to the actual requirements for cremation, and furnaces can be built to cater for their special needs. There are some who prefer the open grid hearth, while others prefer the closed hearth. Many like an auxiliary incinerating chamber in which to complete the cremation. Whatever is required, there is one factor above all and that is characterised by ease of operation. A furnace must be so designed that it can be operated by a man of average intelligence.

It is most desirable that there should be no smoke or objectionable smell from cremation and much thought has gone into the design of furnaces to ensure that this is so, although little can be done when the coffin is not built to comply with regulations.

Gas Consumption

Today the time for cremation varies between fairly narrow limits, an average time being 1-1¼ hours, while the gas consumed varies according to the number of cremations that are carried out in succession. It is difficult to average out the gas consumption because this will depend on the frequency with which the furnace is used. It is possible for the first cremation to take as much as 1,600 cu.ft. of gas while, if there have been five or six subsequent cremations, the last cremation may only require some 200 cu.ft. of gas. In actual practice, it has been found that the average gas consumption for the first cremation is in the region of 1,200-1,500 cu.ft. of gas, with a rapid decrease in consumption should there be further cremations. The following figures taken from the record sheet of one cremation furnace show the gas consumptions which may be expected.

No. 1	1,410 cu.ft.	75 min.
No. 2	855 cu.ft.	75 min.
No. 3	770 cu.ft.	50 min.
No. 4	615 cu.ft.	60 min.
No. 5	410 cu.ft.	60 min.
No. 6	205 cu.ft.	55 min.
No. 7	190 cu.ft.	50 min.

This series gives an average of 61 minutes with an average gas rate of 636 cu.ft. gas per hour (500 c.v.).

The basic design of the Radiant heating cremation furnace is solid hearth with an auxiliary incinerating chamber, both chambers being fired by air blast burners, but the design can always be modified to suit individual requirements, providing, of course, that the modification is practicable.

Spray Welding Process

The spray welding process as a practical method of repairing refractory walls is the subject of a leaflet published by the **Woodall-Duckham Company.** The process described is based on experiments first made by the City of Birmingham Gas Department in 1931 and the apparatus now available enables repairs to be effected to continuous vertical retorts, coke ovens, intermittent vertical chambers, &c. The apparatus supplied consists of an oxygen-coal-gas burner and tube equipment of either the vertical retort and chamber type or the coke oven type; a refractory cement powder feed device with cement container and mixing chamber; special refractory cement powder; and rubber composition tubing for connecting up to the oxygen and coal gas supplies. It is designed for use in conjunction with a coal gas supply and a high pressure oxygen cylinder with a two-stage regulator. The burner supplied for use in vertical retorts and chambers is normally supplied as a 20 ft. long unit which can be adjusted to 8 ft., 12 ft. or 16 ft. as required. Operation of the apparatus requires a team of two men—one to hold and direct the burner and the other to regulate the supply of gas, oxygen and cement powder. Advantages claimed are: Repairs can be effected while the structure is hot; the filling obtained is solid and welded in position; the operator controls both the location and the extension of the weld; and repairs can be carried out ranging from a 'pin-hole' to the building-up of a badly eroded or holed area.

Oil Refinery Work

D. & C. and William Press, Ltd., at an informal gathering on October 6, celebrated the completion of a 40,000 barrel crude oil topping unit at the National Oil Refineries, Llandarcy, South Wales. The company is a consortium of two companies, the Demolition and Construction Co., Ltd., and William Press and Son, Ltd., and has been formed with the object of undertaking the whole or the erection work of an oil refinery or chemical plant. In this specialised work the new company is able to draw upon the resources of the two old-established parent companies. The Demolition and Construction Co., Ltd., was formed in 1923, and is holding contracts for a power station for the Consett Iron Co. Ltd., the foundations of a rolling mill for John Lysaght, Ltd., and retorts and retort houses, new coking ovens and a quay for the South Eastern Gas Board. William Press and Son, Ltd., who are well known as contractors for mainlaying for the majority of gas undertakings in London and the Home Counties, are carrying out work at the Atomic Energy Research Establishment at Harlow, and have in hand the pipework services at Margam, Port Talbot, Abbey Works, and Llanelly, for the Steel Company of Wales, Ltd.

The Telephone Number of the Doncaster undertaking of the East Midlands Gas Board is now Doncaster 3277-8-9.

Manchester Juniors

The President's Day for the 1949-1950 Session of the Manchester and District Junior Association of Gas Engineers was held at St. Helens on October 15, when the St. Helens undertaking's works were visited by a large number of the members.

The annual general meeting was held in the St. Helens Town Hall. In the first instance, those present were addressed by Mr. **A. Henshall,** the Deputy Chairman of the North Western Gas Board, who remarked that the Association's new President, Mr. R. J. Bradshaw, would have the best wishes of everyone for a successful term of office. The pattern of the new structure of the gas industry was now emerging. The North Western Board had decided upon the formation of 17 groups, each of which would be governed by a general manager. Several announcements of such appointments had been made. The group managers would be called together at regular intervals. The board was examining the formulation of schemes of training and of education, so that the filling of important positions in the industry could be provided for in the future. In all cases the outstanding factor would be one of merit.

The retiring President (Mr. **H. N. Dann,** Blackburn) thanked Mr. Henshall for the encouragement he had given them.

It was announced that Mr. N. R. Bowman (Stretford) had been awarded the Charles Hunt Memorial Prize.

The Annual Report was then approved unanimously.

The Colonel W. M. Carr Prize was formally presented to Mr. T. Nicklin.

Mr. **Dann** then presented Mr. A. L. Holton with a bound copy of the proceedings of the Jubilee Dinner, over which Mr. Holton had presided. The copy had been prepared by the good offices of Mr. Norman Smith, Editor of the *Gas Journal*, and the members of the Council had attached their signatures.

Mr. **Holton** (Manchester) expressed his thanks, wishing all success to the Juniors.

The Hon. Secretary (Mr. **T. W. Pickthall,** Hyde) then read the list of officers for the 1949-50 session.

President:—R. J. Bradshaw (St. Helens).
Immediate Past President:—H. N. Dann (Blackburn).
Senior Vice-President:—D. M. Thompson (Wigan).
Junior Vice-President:—L. G. Townsend (Liverpool).
Hon. Treasurer:—H. Partington (Rochdale).
Auditors:—F. A. Collier (Oldham), C. Worswick (Oldham).
Members of Council:—A. H. Harrington, J. M. Brown, A. K. Howell, J. K. Lord, T. Nicklin, J. Oates, W. P. Smith, P. Sumner.
Hon. Secretary:—T. W. Pickthall.

Mr. **R. J. Bradshaw** then gave his Presidential Address, an extract of which was published in the *Gas Journal* of October 19, p. 174.

CHEMICALS AND THE CRISIS

MOVING the adoption of the 33rd report at the annual meeting of the Association of British Chemical Manufacturers on October 13, Sir Harry Jephcott, Chairman, said an enormous amount of work had been involved in the preparation of a report on the chemical industry, arising out of an invitation from the President of the Board of Trade to undertake a comprehensive survey of the industry to show its long term plans and possible lines of development. In his invitation the President expressed the hope that the report would lead to an appreciation by the industry of the steps which could be taken to further the achievement of the various objectives detailed in it. The report was confidential and must remain so until publication, either in the original or in an amended form, was agreed between the President of the Board of Trade and the Council of the Association.

Speaking of the future, the Chairman reminded members that in the export drive the chemical industry was in a special position. They had been advised by the Board of Trade that their first duty as an industry was to meet home demands, especially those of other industries that contributed substantially to the export trade, only the balance being available for export. The industry could be proud of what it had done. In 1938 direct chemical exports were valued at £22 mill.; in 1948 they were close on £84 mill., almost four times as much by value. When corrected for change in value the 1948 exports represented an increase of 56% by volume over 1938. For the first six months of 1949 exports were over £44 mill., thus maintaining an upward trend. Imports on a volume basis were less in 1948 than in 1938.

Some time must elapse before the full implications of exchange adjustment could be realised. It had been argued that we should be able substantially to increase our earnings in the dollar area because of our improved competitive position, but a simple calculation would show that if we maintained our present exports in sterling we should have to increase the volume of exports by 44% to earn the same number of dollars as before the adjustment took place. Even if sterling prices were increased by 20% we should still need a 20% increase in volume to earn the same amount of dollars.

The prospects of chemical exports to the United States were far from rosy, except for a limited number of coal tar products which the American industry required as raw materials, and for certain specialised products which had been developed here. The exchange adjustment would be a handicap in purchasing necessary raw materials on the American continent. Sulphur was an outstanding example. The higher price for sulphur must be reflected in a higher price for sulphuric acid.

We were now faced with what was in effect an economic Dunkirk. The courage, leadership, team spirit, and hard work that enabled us to surmount the odds facing us in 1940 would be required in at least equal measure if we were to fight our way out of our present difficulties.

The principal officers of the Council of the Association for the ensuing year will be as follows:—*President:* Mr. L. P. O'Brien. *Vice-Presidents:* Dr. F. H. Carr, C.B.E., Mr. R. Duncalfe, Dr. E. V. Evans, O.B.E., Dr. P. C. C. Isherwood, O.B.E., Mr. C. F. Merriam, M.C. (Mr. Merriam will also act as an additional Vice-Chairman.) *Chairman:* Sir Harry Jephcott. *Vice-Chairman:* Sir Frederick Bain, M.C. *Hon. Treasurer:* Mr. C. E. Carey. *Hon. Vice-Presidents:* N. N. Holden and Lord McGowan. *Director and Secretary:* J. Davidson Pratt, C.B.E., M.A., B.SC., F.R.I.C., M.I.CHEM.E. *Manager:* A. J. Holden, B.SC., F.R.I.C.

After 60 years' service with Fletcher, Russell, & Co., Ltd. (Radiation Ltd.), Mr. James H. Kemp, who recently retired from the chairmanship of the Company, was presented with a gold watch from the directors and staff. Later, at a luncheon at Palatine Works, Mr. J. R. Walker, a director, presented Mr. Kemp with an armchair from the sales staff. A second presentation was made to Mr. Frank Worthington, who recently retired from the position of representative in the South-West Area.

GAS DISTRIBUTION—MODERN METHODS OF CONTROL*

By T. W. AIKEN, Chief District Engineer,
and
B. I. STONE, Assistant London Manager, the Bryan Donkin Company, Ltd.

(*Continued from page 250*)

THE equipment used for the automatic shutting down of the area holder low pressure volumetric governors and bringing in the auxiliary compressor at the control end has been developed during the last few years specifically for controlling flows. The original volumetric governors installed in 1938 on the West Yorkshire Grid were high pressure governors receiving gas at 2-30 lb. per sq. in. and controlling the flows into low pressure holders. The orifice plate was on the outlet side of the governor necessitating a grid or straightening device to give a steady flow and the total pressure losses were in the region of ¾ lb. per sq. in. This high pressure volumetric

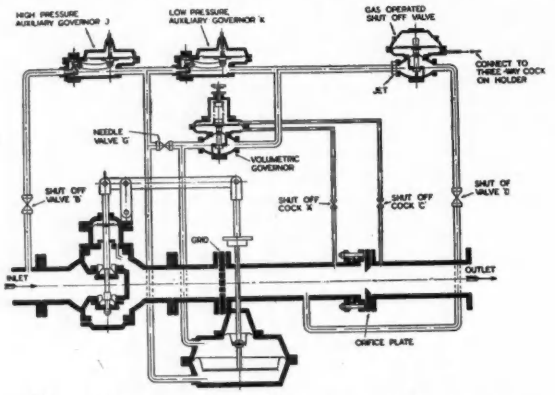


Fig. 9. Diagram of Reynolds governor with volumetric governor

governor has been further developed and the pilot operating governor is now quite separate, is generally fixed on a panel and can be either hand or automatically operated. (Figs. 9-10.)

Volumetric Governors

For comparatively low pressure supplies losses of this order cannot always be tolerated so that a low pressure volumetric

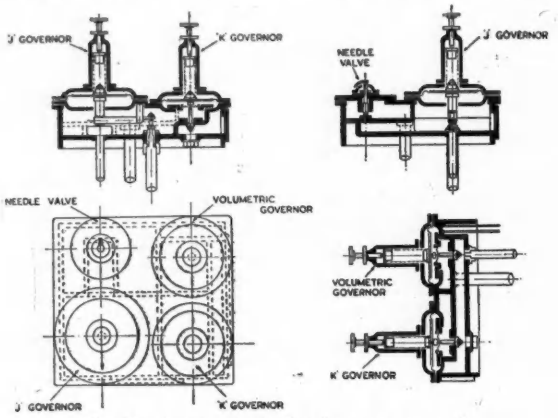


Fig. 10. Arrangement of volumetric controller

* Paper presented to the Southern Association of Gas Engineers and Managers (Eastern District), October 18, 1949.

governor has been developed whereby the pressure losses can be kept down to a few inches W.G. over a range of flow of, say, 3 : 1. The feeder main is generally subjected to pressures of the order of 2-5 lb. per sq. in., but may be under holder pressure. The available pressure difference in these cases may, therefore, be from 5 lb. per sq. in. down to a few inches W.G. The Donkin patent inspirator is used in this type of governor to keep the governor in action on the low inlet pressures and still allow it to shut off when required. (Fig. 11.)

The orifice plate may be fixed on the inlet to the volumetric governor to avoid having to use a grid or straightening device, and so that the length of straight pipe on the downstream of the orifice plate can also be reduced. The ideal, of course, is to fit the orifice plate on the outlet side of the governor, but a considerable distance away from the governor. The orifice plate would then operate under practically constant pressures and would, therefore, be accurate.

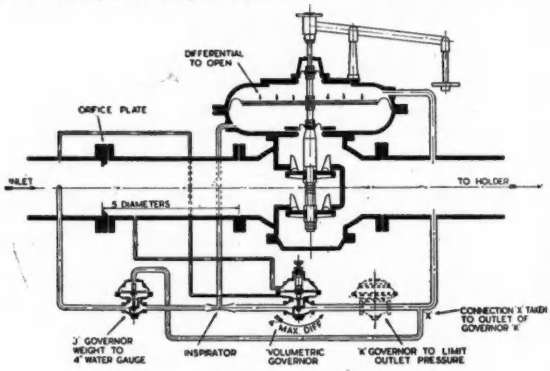


Fig. 11. Low pressure volumetric governor

With the orifice plate on the inlet side and subjected to a range of inlet pressure, the accuracy of measurement at the extreme limits of pressure may call for corrections to be made.

A small low pressure regulator (J) is fitted in the auxiliary system, dead weighted for, say, 4 in. W.G. This regulator is also gas loaded from the outlet side so that it supplies gas at plus 4 in. W.G. pressure over the outlet pressure, whatever that may be. The pilot volumetric governor fitted in the auxiliary is impulsed from 1 diameter on the upstream side and ½ diameter on the downstream side of the orifice plate, across its diaphragm. The pilot volumetric governor fitted on the outlet side of the J governor is, therefore, operating on a maximum pressure difference of 4 in. W.G. The pilot volumetric governor once set for a given orifice plate pressure difference will only move when either the upstream or downstream orifice plate pressure is tending to alter (*viz.*, holder cupping or feeder main pressure altering). Any movement of the pilot volumetric governor valve increases or decreases the flow through the auxiliary system.

The inspirator is fixed between the J regulator and the pilot volumetric governor and the throat of the inspirator is connected to the isolated diaphragm chamber of the main governor. It follows, therefore, that any change in flow through the auxiliary system brought about by an alteration of the pilot volumetric regulator valve which in turn has been caused by changes in orifice plate pressures, alters the pressure conditions

at the throat of the inspirator and decreases or increases the pressure in the diaphragm chamber of the main governor.

If, for instance, the feeder main pressure is decreasing, the pilot volumetric governor will be opening, the flow through the auxiliary system will be increasing and the pressure in the diaphragm chamber of the main governor connected to the throat of the inspirator will be decreasing and so opening the main governor.

If the inlet pressure falls away to within a few tenths of the outlet pressure, the flow will be very small and the main diaphragm will be in equilibrium. As the main governor is counterbalanced for 1 in. pressure the main governor would close and act as a non-return valve.

By the addition of a small pressure regulator K on the outlet side of the pilot volumetric governor in the auxiliary system, impulsed from the holder pressure, the main governor will close up when the holder is full and so operate as a holder safety valve. The pressure regulator K will close up on a small increase in pressure due to the holder coming up against stops, or it can be operated by suitable holder gear to close at any predetermined position of the holder. When the pressure regulator K closes there would be a pressure difference of 5 in. W.G. across the diaphragm of the main governor to close it tightly. (4 in. W.G. from J regulator and 1 in. from counterbalance.) Automatic alteration of volume on a time basis is obtained by fitting a separate pilot volumetric regulator in the auxiliary system, operated by a clock. (Fig. 12.) The 'on' position of this clock operated pilot volumetric regulator automatically puts the first pilot volumetric regulator out of commission.

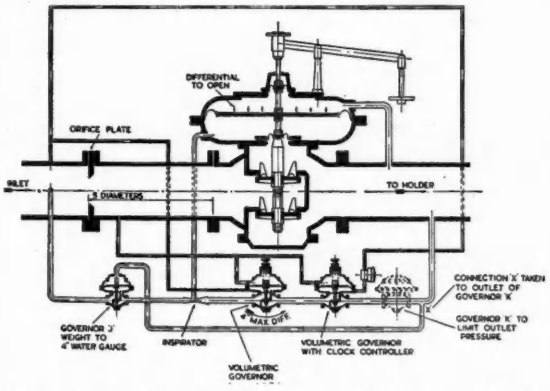


Fig. 12. Low pressure volumetric governor (for two volumes).

For closing the main governor down at a minimum fixed inlet pressure, a governor can be fixed in the auxiliary system, impulsed from the inlet side and set to close at the desired pressure. This stops the flow through to auxiliary system and the main governor is closed with 5 in. W.G. pressure difference across the main diaphragm.

Control of Compressors

Reverting to Fig. 8, the difficulties involved in the automatic operation of auxiliary compressors at the main station to augment the feeder main volume on peak loads, from the main station low pressure storage, centres round stopping the compressor at the proper time. Electrically-driven compressors are generally used and these should be driven by motors having as large a range of speed as possible. A pressure switch starts up the compressor when the pressure in the feeder main drops, say, 1 lb. per sq. in. The compressor starts on its lowest speed and then comes under the influence of its governor which controls the speed to keep the gas pressure constant at, say, 4½-5 lb. per sq. in. The speed of the main compressor motor is controlled by a pilot reversing motor operating the main motor controller. The pilot motor is operated by a pair of switches which are opened and closed by the gas pressure regulator.

The stopping of the compressor at the correct time according to the feeder main load cannot be operated by a pressure switch due to the fine pressure limits obtaining. For instance, if the compressor started up at 4 lb. per sq. in., a pressure switch for stopping would have to operate at round about 4½ lb. per sq. in. as the feeder main pressure cannot exceed 5 lb. per sq. in., due to the working of the relief valve (H). It is also quite possible that the gas pressure could touch 5 lb. per sq. in. when the compressor first starts up, as its output, even on its lowest speed, may be more than the deficiency in the feeder main at the beginning of peak load. Once the compressor has started up, it is best to keep it running until peak load has gone. The time to stop the compressor is when the volume of gas flowing into the low pressure holder through relief valve (H) is equal to the volume passed by the compressor at its lowest speed. We should, therefore, fix an orifice plate on the outlet of relief valve (H), the pressure difference over which would operate a pressure switch and stop the compressor. This pressure difference can be quite small, say, 5/10 in. W.G. The value of this device is that the longer the compressor over-runs its time, the higher becomes the orifice pressure difference and the more positive becomes the stopping operation.

With this equipment it is possible to operate the whole scheme unattended.

Remote Control

An alternative development in the working of a system such as the above is by remote control. The following standard facilities are available to operate this system: (1) Indication of the pressure on the inlet of the volumetric governor; (2) indication of the flow through the volumetric governor into the station; (3) control of the flow into holders; (4) indication of gasholder stocks with audible and visible alarms for high and low levels; (5) control and indication of the position of holder inlet and outlet valves; (6) control of district pressure; (7) indication of district pressure; (8) indication of district loads on peaks; (9) control of station booster and indication of running or stopped; (10) indication and alarm of low pressure on inlet to volumetric governor; (11) indication and alarm of low pressure on the district; and (12) indication and alarm of electricity failure on the station.

With these facilities at his disposal, the controlling engineer knows exactly the conditions at each of the gasholder stations in his area. Therefore, knowing the stocks, the input and output flows, he can make the necessary adjustments at any station according to its characteristics and at any other stations that operate in conjunction with it.

Provided that the storage capacity of a station is sufficient to meet peak loads, the station would be simple to operate, but conditions encountered in different districts vary considerably. Some districts have large peaks and the local gasholders have quite inadequate storage capacity. Other districts have small peaks which may be quite unpredictable and have ample storage capacity to deal with them. Wherever possible, district peaks should be met by the district holder, without increasing the average input into the holder. Actually the peak should be met with the input flow shut off in order that the feeder main may meet the peaks brought about by the district pressure regulators, without increasing the initial pressure on the feeder main. To ensure this, it is necessary that the gas in the inner lifts of holders should be available for peak load pressures, and to this end, the provision of a small pressure raising plant should be incorporated. This plant automatically starts up when the holder starts to uncup and stops when it is cupped. It can also run on a time basis. This plant is also subject to remote control.

The equipment used for remotely operating either volume or pressure governors is the standard type diaphragm governors with relay systems. The loading of the pilot volumetric governor in the case of volumetric governors or the control governor in the case of pressure regulators, is carried out by a cam which loads or unloads the diaphragm. The cam is operated by a fractional horse power reversible electric motor. The cam is shaped to give equal increments of either flow or pres-

sure for a given turning movement. For every call made by the operator for a change in either flow or pressure, the motor turns for a given time, say, 6 seconds, and the setting of the governor is altered by a fixed amount. The amount of the alteration per operation can be varied by altering the time it is allowed to run.

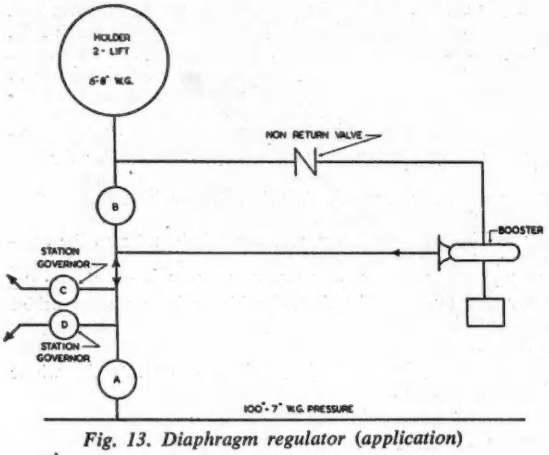


Fig. 13. Diaphragm regulator (application)

The electrical transmission system is the Automatic Telephone and Electric Co., Ltd., supervisory remote control apparatus. This equipment has been used in the field of electrical generation and distribution for some 20 years and is widely used for control purposes on the British grid system where absolute reliability is demanded. The system enables the controlling engineer to allocate the gas just where it is required and the feeder main can be operated at a very high load factor.

Application of a Diaphragm Regulator

To illustrate the advances that have been made in the duties performed by a single diaphragm regulator, a description is given of a station that is controlled by one such regulator. (Fig. 13.) The station is supplied with gas from a district intermediate high pressure main carrying up to

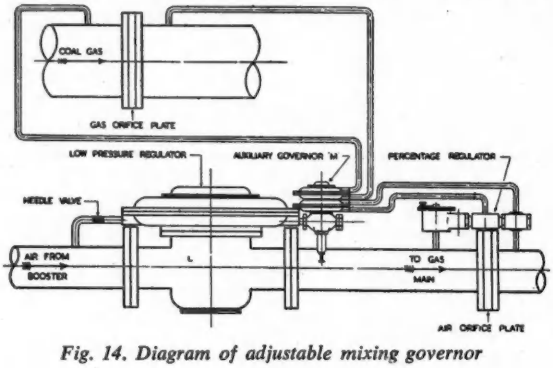


Fig. 14. Diagram of adjustable mixing governor

100 in. W.G. pressure. There is a two lift holder throwing 6 in. and 8 in. W.G., two station governors, C and D, a low pressure fan booster, a diaphragm non return valve A, and the controlling regulator (B). The controlling regulator B is 30 in. diameter and passes up to 600,000 cu.ft. per hour.

The feeder main which supplies the station also serves other stations and also many district governors. The function of controller regulator B is to regulate the flows and pressures coming into the station from the feeder main and going out of the station through the station governors. Actually it has six separate duties to perform, any of which may be necessary at any time according to the gas conditions. It is necessary to :

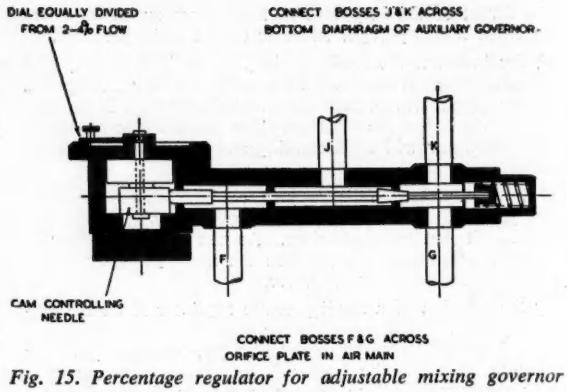

DIAL EQUALLY DIVIDED FROM 2-6 FLOW
CONNECT BOSSES J & K ACROSS BOTTOM DIAPHRAGM OF AUXILIARY GOVERNOR
J
K
F
G
CAM CONTROLLING NEEDLE
CONNECT BOSSES F & G ACROSS ORIFICE PLATE IN AIR MAIN

Fig. 15. Percentage regulator for adjustable mixing governor

(a) Ensure 7 in. W.G. on the inlet to station governors at all times ; (b) use surplus gas from the feeder main economically ; and (c) keep the holder stock up.

When the holder is uncupped the controller regulator (B) will allow gas to pass into the holder, provided the pressure on the inlet to the station governors is more than 7 in. W.G. If the figure is less than 7 in. W.G., (B) will close. It is thus acting as an excess pressure valve. When the holder is cupped (B) will remain open, allowing gas to pass into the holder (at 8 in. W.G.) or out of the holder on the inlet of the station governors. When the holder is full, and provided the pressure on the inlet of the station governors is more than 7 in. W.G., (B) will close. When the holder is full and the inlet of the station governors falls to less than 7 in. W.G., (B) will open and allow the holder to supply the station governors. If the holder is uncupped and the pressure on the inlet of the station governors is less than 7 in. W.G., the booster will start up and (B) will close (acting as a non return valve). (B) can be closed by remote operation irrespective of any working condition. The governor is finely counterbalanced to close when the main diaphragm is in equilibrium and 1 in. W.G. pressure difference will put it into operation. The various functions are performed by individual pilot governors each operating on their own individual gas condition.

For example, if the holder were cupped at 8 in. W.G. their control diaphragm would vent the diaphragm chamber to atmosphere and the governor would be fully open (having a gas pressure difference of 8 in. W.G. across it) and gas would either be flowing into the holder if there was plenty in the feeder main or out of the holder if the feeder main was down in pressure. We have had one of these governors in operation for two to three years, the station being entirely unattended.

Proportioning Governors for Oxide Revivification

Figs. 14, 15, and 16 are cases where it is necessary to control the flow of gas as a fixed percentage, or proportion of another

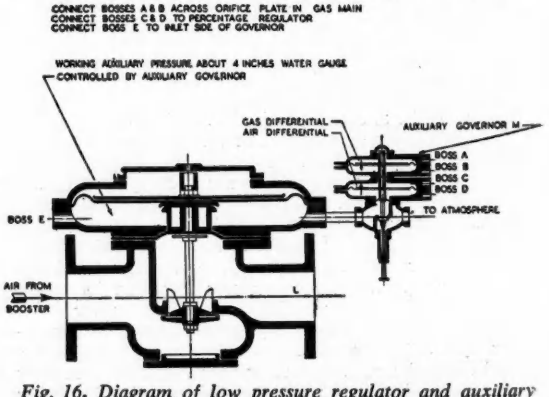

CONNECT BOSSES A & B ACROSS ORIFICE PLATE IN GAS MAIN
CONNECT BOSSES C & D TO PERCENTAGE REGULATOR
CONNECT BOSS E TO INLET SIDE OF GOVERNOR
WORKING AUXILIARY PRESSURE ABOUT 4 INCHES WATER GAUGE CONTROLLED BY AUXILIARY GOVERNOR
GAS DIFFERENTIAL
AIR DIFFERENTIAL
AUXILIARY GOVERNOR M
BOSS A
BOSS B
BOSS C
BOSS D
BOSS E
TO ATMOSPHERE
AIR FROM BOOSTER
L

Fig. 16. Diagram of low pressure regulator and auxiliary governor for adjustable mixing governor.

gas. An example of this is the flow of air into the coal or carburetted water gas stream for oxide revivification. Air is supplied under pressure to the inlet of a low pressure regulator L and the required percentage of air is allowed to pass through the regulator, and into the gas stream, under the control of the auxiliary governor M.

The gas is measured across an orifice plate and the orifice plate pressure differential is connected to the top diaphragm of governor M, the pressure acting downwards. A similarly proportioned orifice plate is inserted in the air main and the pressure differential is connected to the bottom diaphragm of governor M, the pressure acting upwards.

The amount of air passing regulator L is determined by the position of the valve in governor M; the closing of valve M banks up the pressure in the isolated diaphragm chamber of regulator L, thus closing the valves of regulator L and reducing the flows, and vice versa. The stability of governor M is brought about by the gas orifice plate pressure differential acting downwards on the top diaphragm, being equal to the air orifice plate pressure differential acting upwards on the bottom diaphragm, the orifice plates being designed to give the required percentage of one gas to the other. Any change in gas flow will, therefore, produce a corresponding change in air flow.

As it may be desirable to change the proportion of air to gas, means had to be found of altering the effect of one of the orifices over the pilot governor without interfering with the effect of the other orifice. It is better for this to be done without having to change the orifice. The actual adjustment is controlled by a cam, operated by a spindle having a pointer attached which shows the proportion on a graduated plate, graduated to suit requirements. (Fig. 15.) The cam controls a needle valve which opens or closes a communicating port between the impulse pipes J and K on the upstream and downstream sides of the air orifice.

For the minimum percentage of air, the needle is in its extreme right position, closing the port and the actual pressure differential across the air orifice is transmitted to the pilot governor diaphragm.

With this setting the differential pressure across the air orifice must be the same as that across the gas orifice in order to maintain equilibrium in governor M. If the gas flow increases, the additional differential pressure, acting downwards on the top diaphragm of governor M, opens the valve of governor M and allows the air in the diaphragm chamber of regulator L to escape. This increases the flow of air through regulator L to allow the air differential to balance the gas differential.

To increase the proportion of air to gas, the needle valve in the percentage regulator is opened so that air flows through the port across the orifice plate. By adjusting this needle valve the differential pressure across the orifice plate is increased, while the differential pressure in the impulse pipes to governor M remains constant.

To take a practical example, if a certain gas flow produces a differential pressure across the gas orifice of 1 in. W.G. and the air orifice is designed to pass 2% of that flow with 1 in. differential pressure, and the percentage regulator is adjusted so that to maintain the 1 in. W.G. differential pressure on the air diaphragm of governor M, the air orifice plate pressure has to be increased to 4 in. W.G., then the air flow will be exactly doubled (4%) as the flows varies as the square root of the head.

For any setting of the needle valve percentage regulator the differential pressure across the orifice plate will always be a proportion of that across the air diaphragm in governor M, so that the percentage will be constant at any setting of the cam. By suitable designing, any reasonable range can be provided.

METHODS FOR MEETING THE PEAK LOAD

MOST manufactured gas companies in the United States have found that their distribution systems are fast becoming bottlenecks and that the possibilities of increasing the B.Th.U. content of the gas distributed offer opportunities for increasing capacities of both their distribution and their production plants. Discussing this question in a paper to the Pacific Coast Gas Association, Mr. Edwin L. Hall, a director of the American Gas Association testing laboratories, explained that in New England, where natural gas is not now available, two companies have initiated interesting changes which have proved successful and profitable.

In Cambridge, Mass., carburetted water gas of 528 B.Th.U. per cu.ft., was replaced by 951 B.Th.U. oil gas. Complete appliance conversions were necessary, but this cost was more than offset by the gain in plant and distribution capacities and by the saving in the cost of gas-making materials. Relatively light oil has been used for gas-making, but equipment is now being installed so that heavy oil can be used further to reduce the cost of the gas made.

Another interesting development has been in Framingham and Worcester, where the B.Th.U. content of the carburetted water gas has been increased from 528 to 660 B.Th.U. In Framingham, the plant capacity and the transmission and distribution capacity were so overloaded that on peak days the holders were almost grounded, the compressors were running at maximum speed, and distribution system pressures were alarmingly low. New equipment was ordered, but it seemed evident after careful studies that an increase in thermal value of the gas would provide the answer to many if not all of the problems. A survey showed that, except for some industrial systems, refrigerators, and a few miscellaneous appliances, any appliance that was properly adjusted on the old 528 B.Th.U. gas would perform properly on the 660 B.Th.U. gas without readjustment. Experience has proved that the higher B.Th.U. gas permits slightly more than 25% increase in capacity of the Framingham water gas sets, and a similar increase in the capacity of holders and other auxiliary equipment, including, of course, distribution systems. The decrease in steam required for gas-making and for exhausters and compressors has permitted the use of fewer boilers and less boiler fuel. The set efficiencies have been improved and the use of less coke and more oil has resulted in a decrease in the cost per therm of gas.

All these methods of meeting peak load, except the storage and use of natural gas itself, develop problems of gas interchangeability. A great deal of work has been done at the A.G.A. testing laboratories and by other investigators in order to develop facts that may be used by operators in predicting the interchangeability of these substitute gases. With any one burner or any one appliance the limits of interchangeability can be established precisely. All investigators have found difficulty in translating limits so found to a gas distribution system.

Some undertakings have learned from experience that their distribution systems contain appliances connected to the lines that on an average perform in the same way as a selected group of appliances or as a selected test burner. Such a group of appliances or the selected test burner may then be used as a control on the sendout gas. There is a need for someone to develop a method of measuring the appliances' tolerances on any gas distribution system. Whether this index can be developed from a survey of the appliances on the system or by a test burner correlated with appliance complaints or by some other method, has not been settled to a satisfactory degree.

So long as new processes are available and so long as the relative cost of raw materials fluctuates as it has in the past, new methods and new applications of old methods will be used by gas engineers to meet their own particular problems. There is still a distinct need for a better method by which gas engineers may determine whether or not the gases they produce can be used on their systems by some means other than trial and error. Moreover, this need will increase as production, distribution, and utilisation problems become more complex.

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PUBLICATIONS

Complete sets of the 21 reports and papers presented and discussed at the 4th International Gas Conference in London in June, 1949, together with the official proceedings of the conference, are obtainable (price 3 guineas per set, post free) upon application to the Secretary of the Institution of Gas Engineers, 1, Grosvenor Place, London, S.W.1.

The Gas Research Board has published a new grey and a new blue edition. These are entitled 'The Report of the Director for the Year 1948' (GRB 45/27), and '35th Report of the Refractory Materials Joint Committee: 1934-44' (GRB 12), respectively. They are available from the Gas Research Board at 1, Grosvenor Place, London, S.W.1, price 2s. 6d. and 1s. 6d., respectively. post free.

The North Thames Gas Board has published an attractively illustrated booklet on large-scale catering. Entitled 'Monsieur Therm—Chef-D'Oeuvre!' it describes in a minimum of words, but with maximum effect, the important part that gas plays in hotels, restaurants, hospitals and schools. Fifteen whole-plate photographs of first-class quality illustrate the efficiency, speed, flexibility and reliability of gas apparatus in a kitchens. The reader who requires additional information is advised to get in touch with the Catering Section of the Board at Vincent Street, S.W.1.

National Insurance*

The National Insurance Act has now been in force for just over a year and in publishing the second edition of their book, Messrs. Potter and Stansfield recall that two years elapsed between the Act receiving the Royal Assent and its actual implementation. The reason for this, they state, was that the Act was so complex a subject that it was found that the only way to keep it down to manageable proportions was by making it a framework or skeleton upon which to hang regulations. The two years were thus utilised in clothing the skeleton by means of a large volume of regulations. In consequence, the first edition, which was published shortly after the Royal Assent had been given, contained much in the notes which was, of necessity, guesswork.

Although regulations will continue to be passed, the authors decided that the most suitable date for the revised edition would be July 5 this year. This has allowed the inclusion of the Death Grant Regulations, and has enabled some mention to be made of the National Insurance Act, 1949, in the notes to regulations as to contributions for Death Grants, and of the retrospective amendments to the 1946 Act which the 1949 Act effects. The book contains a comprehensive general introduction to the Act as a whole, and the full text of the Act annotated and explained in detail. Texts of the many regulations are printed in a third section in chronological order.

* 'National Insurance,' second edition, by Douglas Potter, M.A., Inner Temple and South-Eastern Circuit, Barrister-at-Law, and D. H. Stansfield, B.A., Lincoln's Inn and Western Circuit, Barrister-at-Law. Butterworth & Co. (Publishers), Ltd. 30s. (by post 31s.).

Full details of the examinations in coal processing, fuel technology, the technology of gas manufacture and supply, gas fitting, and allied subjects to be held by the City and Guilds of London Institute during the 1949-50 session are given in the Department of Technology's *Regulations and Syllabuses* (John Murray, Albemarle Street, W.1, 1s.). Special awards are offered in the technology of gas manufacture and supply, and gas fitting examinations by the Society of British Gas Industries, and in the coke and by-products examinations by the Coke Oven Managers' Association.

COMPANY NEWS

Cochran and Co. (Annan), Ltd.

The interim Ordinary dividend has been increased from 5% (the rate for the past two years) to 7½%, tax free. This makes, with the usual 1½% net interim dividend, a total of 9% for the year to June 30. The balance at profit and loss is £122,204, compared with £111,756, and the forward balance amounts to £10,301, against £6,864.

Falk, Stadelmann and Co., Ltd.

After providing £350,595 for directors' remuneration, depreciation, plant, machinery, &c., war damage insurance, profits tax and income tax, the net consolidated profit for the year to M[illegible]31 was £149,390, compared with £1[illegible]7,830 for 1947-48. A final dividend as a bonus of 5% is added to the interim Ordinary dividend of 10% already paid (the same as for the previous year); to contingencies £21,000 (£15,000); to pension £5,000 (same); to minority holders £12,479 (£11,306); forward, £231,778 (£175,402). The Company's net profit was £93,376 (£86,233), and after deducting appropriations there was a carry-forward of £43,765, against £42,277 for the previous year. The fall in profit for the year is explained by the Chairman, Mr. Hugo Falk, in his statement. The reduction, he says, has been caused mainly by a decline in home sales, although the total sales approximate very closely to those achieved in the previous year by reason of the fact that the business succeeded in increasing its export sales 'to a gratifying extent.'

The Cambridge Instrument Co., Ltd., has issued a leaflet (No. 261A) describing the new Cambridge Quick-Acting Recorder, a sensitive, high-speed instrument for recording rapidly changing magnitudes of 'phenomena that can be resolved as electrical resistance or voltage.' Recorder networks so far employed fall into three general types: Recording potentiometers, either single or multi-range calibrated in terms of voltage, current, temperature, light intensity, &c.; resistance bridges, single range or multi-range calibrated in resistance, temperature, strain, &c.; and ratiometers, measuring the ratio of two variables which can be applied to the instrument in the form of two voltages or currents. A high response time of about half a second is claimed for the pen recorder of this instrument. Copies of the leaflet can be obtained from the Company at 13, Grosvenor Place, London, S.W.1.